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DISEASES CAUSED BY BACTERIA AND FUNGI

RØMER, O. (1952). Om gruppe Ca-streptokokkernes betydning ved yverinfektioner hos kvaeget. **[Group Ca streptococci in udder infections in cows.]**—*Nord. VetMed.* **4**, 1129-1147. [In Danish. English and German summaries.] **661**

A report on the presence of streptococci in the udders of 220 cows on 15 farms. Group Ca streptococci were found in 19% of these cows. In 64 of 88 infected quarters there was evidence of changes in mammary consistency. R. concluded that these streptococci are widely distributed and that attempts should be made to control them, penicillin being very effective. —R. B. HOLCOMBE.

KRÜGER, W. (1953). Das Problem: Galt. I. Allgemeines zur Frage des Bestehens einer erblich bedingten Resistenz bzw. Anfälligkeit gegenüber der Infektion mit Mastitis-streptokokken. **[The mastitis problem. I. Hereditary resistance and susceptibility to streptococcal mastitis.]**—*Prakt. Tierarzt.* No. 3. 43-45. **662**

K. attempted to relate the increased incidence of mastitis in Germany since 1900 with the growth of livestock improvement programmes, and discussed the literature on contributory factors and hereditary variations in resistance.—J. E. SMITH.

MURPHY, J. M. & STUART, O. M. (1953). **Some results of the application of *Streptococcus agalactiae* (Cornell 48 strain) to the bovine teat canal by means of the Hadley-Wisconsin swab technique.**—*Cornell Vet.* **43**, 465-480. [Authors' summary modified.] **663**

Seventeen quarters of seven cows were exposed to *Str. agalactiae* by means of swabs soaked in culture and inserted into the teat duct [Hadley (*V.B.* **3**, p. 587)]. The test organism was recovered in the foremilk from every exposed quarter for at least 2 milkings, but infection of the gland occurred in only 7 quarters.

HAMMER, D. (1953). Die Pneumokokkeninfektion des Kalbes. **[Pneumococcus infection in calves.]**—*Mh. Tierheilk* **5**, 135-150. **664**

Pneumococci belonging to group X (X6-X8, X10, X18, X20) were recovered in 167 cases of pneumonia in calves in the first three weeks of life out of 260 cases of streptococcal infection in calves in Southern Baden. From the remaining 93 calves, streptococci belonging to groups D, E and L were isolated. Evidence from P.M. examinations of 139 of the calves from which pneumococci were isolated showed that airborne infection was the most prevalent. The incidence was highest in winter months. Calves were most susceptible during their first three weeks of life. H. advocated vaccination of the dams with a mixed pneumococcus vaccine.

—E. A. HIRSCH.

ADLER, H. C. (1953). **Diagnosis of *Vibrio fetus* carrier bulls by intravaginal inoculation of guinea-pigs. Preliminary report.**—*Nord. VetMed.* **5**, 454-459. [In English. Danish and German summaries.] **665**

Oestrus was induced in 20 g. pigs by intramuscular injection of 250 I.U. oestradiol benzoate: 72 hours later, individual samples of semen from 7 bulls infected with *V. fetus*, were introduced *per vaginam*. Bacteriological examination of the uterus, 5 to 6 days later, showed that 50% of the g. pigs were infected with the organism.—IAN NEWSAM.

ESSERT, Z. (1952). Antraks u Crnoj Gori od 1946-1950 godine. **[Anthrax in Montenegro during 1946-50.]** — *Vet. Glasn.* **6**, 190-198. **666**

A statistical report. The incidence was 0·5

to 2·5 per 10,000 head of stock, and was highest along the banks of rivers that are flooded annually.—I. MARTINI.

DAVIES, D. G. & HARVEY, R. W. S. (1953). **Dried bones as a source of anthrax.**—*Lancet.* **265,** 880-881. **667**

The authors reported 14 cases of malignant pustule among factory workers in Wales handling sun-dried crushed bones imported from the Far East, or carrying the empty sacks in which they had been contained.—W. R. BETT.

RAJAGOPALAN, V. R. & ISRAIL, M. (1952). **Laboratory experiments and field trials with vaccines from Sterne's avirulent anthrax strains.**—*Indian vet. J.* **29,** 171-186. **668**

Anthrax spore vaccine was prepared from a local virulent strain of *B. anthracis* cultivated on 50% horse serum agar in 20% CO_2, as described by Sterne. Saponin was not added. The authors stated that when vaccines containing 0·4–0·5% saponin were used under Indian conditions a high proportion of animals developed abscesses. At a dosage of one million spores the vaccine conferred immunity lasting for 12 months in susceptible species including elephants and camels.—P. C. GANGULEE.

VAN WAVEREN, G. M. (1953). Tuberculose-onderzoek bij runderen met P.P.D.-tuberculines. **[The intradermal tuberculin test in cattle, using P.P.D. tuberculins.]**—*Tijdschr. Diergeneesk.* **78,** 735-760. [English, French and German summaries.] **669**

The author discussed the development of the intradermal tuberculin test in cattle in the Netherlands. In an experimental series 706 known tuberculous cattle (P.M. positive) were tested; 97% gave positive reactions. Human and bovine types of P.P.D. were compared in laboratory and field experiments. As bovine type P.P.D. gave fewer non specific reactions it is now used for field work exclusively.

The comparative test with avian and bovine types of P.P.D. is recommended only for the further examination of supposed non-specific reactions in TB.-free herds.

—C. A. VAN DORSSEN.

LUKE, D. (1953). **Observations on the susceptibility to tuberculosis of pigs farrowed by infected sows.** — *Vet. Rec.* **65,** 640-641. [Author's summary modified.] **670**

L. presented evidence which suggests that young pigs born to infected sows are much more susceptible to experimentally induced TB. than are those born to uninfected dams.

SEIBOLD, F. X. (1953). Ein neuer Weg zur Schnellanreicherung von Tuberkelbazillen. **[Concentration of tubercle bacilli in cerebrospinal fluid by electrolysis.**—*TuberkArzt.* **6,** 29-33. **671**

An account of the concentration of tubercle bacilli by the use of cataphoresis.

—H. BEHRENS.

ANON. (1951). **Streptomycin treatment of tuberculous lesions of the trachea and bronchi. A report to the Medical Research Council by the Streptomycin in Tuberculosis Trials Committee.**—*Lancet.* **260,** 253-257. [For previous Report, see *V.B.* **19,** 1430.] **672**

II. ANON. (1953). **Laboratory techniques for the determination of sensitivity of tubercle bacilli to isoniazid, streptomycin, and P.A.S. (M.R.C. Isoniazid Trial: Report No. 3.).**

III. ANON. (1953). **Emergence of bacterial resistance in pulmonary tuberculosis, under treatment with isoniazid, streptomycin plus P.A.S., and streptomycin plus isoniazid. (M.R.C. Isoniazid Trial: Report No. 4.).**—*Ibid.* **265,** 217-223. [Author's summaries modified.] **673**

I. A report on a co-operative therapeutic trial with streptomycin carried out on 35 human patients with tuberculous tracheobronchitis at 6 British hospitals. The drug was injected i/m every 6 hours at a dosage of 1–2 g. daily for 4 months, the lesions being examined by bronchoscopy before treatment and after 2 and 4 months. The bronchial lesions were healed or greatly improved in 24 cases, slightly improved in 7, unchanged in 3 and deteriorated in one. The response of these lesions during the first 2 months gave a useful indication of the probable later course.

II. Laboratory techniques were described for the determination of the sensitivity of tubercle bacilli to isoniazid (*iso*-nicotinic acid hydrazide), streptomycin, and *p*-aminosalicylic acid (sodium salt). These techniques were used in the co-operating laboratories during the current Medical Research Council trial of isoniazid in pulmonary TB. Definitions of bacterial sensitivity and resistance to each of the three drugs were given. Emphasis was laid on the need for great care in the performance of these and similar tests involving the handling of tubercle bacilli in order to avoid possible risk of infection of laboratory workers.

III. In a trial of the treatment of pulmonary TB., the development of bacterial resistance over a period of six months to isoniazid

and to streptomycin was studied in three groups of patients—264 treated with isoniazid alone, 233 with streptomycin plus P.A.S., and 130 with streptomycin plus isoniazid. The standard dosages of the three drugs were: isoniazid 100 mg. twice a day; streptomycin 1 g. daily; and P.A.S. (sodium salt) 5 g. four times a day. After three months' treatment only a proportion of patients continued with the original chemotherapy; for those who continued, the dosage of streptomycin was usually reduced to 1 g. three times or twice a week.

Treatment was determined by random allocation and the clinical condition on admission to the three treatment series was comparable.

Bacillary resistance to isoniazid was found in 64% of culture-positive patients on isoniazid alone at three months, and in 93% (28 of 30) at six months. These 28 resistant strains represented 58% of the total patients for whom cultures were undertaken. For patients on streptomycin plus isoniazid 11% of positive cultures were resistant at three months and 50% (2 of 4) at six months. These 2 resistant strains were obtained from a total of 58 patients for whom cultures were undertaken (3%).

Over a three-month period after stopping treatment with isoniazid there was no evidence of any general reversion of isoniazid-resistant strains either to a lower level of resistance or to sensitivity.

For a period of six months, streptomycin plus isoniazid was quite as effective as streptomycin plus P.A.S. in preventing the emergence of strains resistant to streptomycin. On streptomycin plus isoniazid 8% of positive cultures were streptomycin-resistant at three months and 0% (0 of 4) at six months; on streptomycin plus P.A.S. the corresponding figures were 6% and 29% (2 of 7).

Patients with organisms initially P.A.S.-resistant were not protected from the risk of development of streptomycin resistance by treatment with streptomycin plus P.A.S.

BELJANSKI, M. & GRUMBACH, F. (1953). Étude biochimique d'une souche de Mycobacterium tuberculosis streptomycino-sensible et d'une souche streptomycino-résistante dérivée de la souche sensible. **[Biochemical studies on a streptomycin-sensitive strain of *M. tuberculosis* and on a streptomycin-resistant strain derived from it.]**—*C. R. Acad. Sci., Paris.* **236,** 2111-2114. **674**

A streptomycin-resistant strain of *M. tuberculosis* H37Ra during the first days of its growth stores ribonucleic and desoxyribonucleic acids in much greater quantities than does the streptomycin-sensitive strain from which it is derived.—W. R. BETT.

SJOLLEMA, P. (1953). Over aspecifieke reacties en hun oorzaken. **[Causes of non-specific reactions to the tuberculin test in cattle.]**—*Tijdschr. Diergeneesk.* **78,** 761-772. [English, French and German summaries.] **675**

Of the 21,350 herds (410,000 cattle) in Friesland—from which province TB. in cattle had been eradicated—38% (8,215 head of cattle) still gave a positive reaction to the single tuberculin test. Only 154 of these reactors were tuberculous, the remainder being non-specific reactors. Eighty-three per cent. of the non-specific reactors in 1950-51 did not react in 1951-52. Lesions of so-called " skin TB." were found to be the most important cause.

—C. A. VAN DORSSEN.

DUFOURT, A. (1952). A propos des tuberculoses expérimentales obtenues par filtration de cultures et de produits tuberculeux. **[Filtrable stages of the tubercle bacillus.]**—*Pr. méd.* **60,** 174-175. **676**

Nègre & Bretey [*V.B.* **23,** 1445] revived the theory of the tubercle ultra-virus. D. concluded that under certain conditions filtrable elements of the tubercle bacillus can pass porcelain filters, collodion membranes, and the placenta.—W. R. BETT.

WELLS, A. Q. (1953). *Mycobacterium tuberculosis* **var.** *muris.*—*J. gen. Microbiol.* **9,** 149. **677**

W. stated that the valid name for the acid-fast bacillus which causes TB. in voles is *Mycobacterium tuberculosis* var. *muris* Brooke.

—E. A. GIBSON.

LEMBKE, A. & MENNINGER, H. (1952). Stoffwechseluntersuchungen an Mycobacterium tuberculosis. **[Metabolism of *M. tuberculosis.*]**—*Kieler Milchw. ForschBer.* **4,** 41-84. [English, French and Spanish summaries.] **678**

The authors investigated the action of oleate and elaidinate soaps on the respiration, extent of dehydration, catalase activity and morphology of cultures of human type *M. tuberculosis.* In general, metabolism was facilitated by soap concentrations of 2×10^{-4} N., and impaired by concentrations of 2×10^{-2} N. and 2×10^{-3} N. Stronger concentrations had a bactericidal action.—R.M.

WALLGREN, A. (1953). **Immunity in tuberculosis.**—*Acta tuberc. scand.* **28,** 155-194. [In English.] 679

In this report, read before the International Tuberculosis Congress at Rio de Janeiro in 1952, and based on clinical and epidemiological observations, and on a review of the literature, W. discussed natural resistance to TB. in man and animals, and the interrelationship of natural resistance and acquired immunity. He described the influence of natural resistance, specific immunity, and hypersensitivity on the course of virulent infection in man and animals.—W. R. BETT.

KRESS, F. (1953). Versuche zur Schutzimpfung gegen die Rindertuberkulose mit Organvakzine (Rtb.-Anakomplex-Organvakzine). [**Immunization of cattle against TB. with a vaccine prepared from organs of tuberculous cattle.**] —*Wien. tierärztl. Mschr.* **40,** 385-398. [English, French and Italian summaries.] 680

K. described in detail the preparation of a vaccine, and its adsorption on aluminium hydroxide, from fresh finely-minced tuberculous lung and lymph node tissues in the proportion of 5 : 1 respectively, the mixture being treated with physiological saline and formaldehyde. Two calves vaccinated with this organ vaccine were free from TB. 21 months after a year's contact with tuberculous cattle, whereas all of several unvaccinated calves contracted the disease. The immunization of cattle with this adsorbed organ vaccine was in progress. A similar vaccine prepared from tuberculous liver and spleen from hens, was found to confer immunity on fowls.

SEAGLE, J. B., KARLSON, A. G. & FELDMAN, W. H. (1953). **Irradiated antituberculosis vaccine, including comparison with BCG in experimentally infected guinea pigs.**—*Amer. Rev. Tuberc.* **67,** 341-353. [French and Spanish summaries.] 681

G. pigs, after a single intracutaneous, subcutaneous, intramuscular, or intravenous injection of a non-viable, ultraviolet light-irradiated antituberculosis vaccine, showed no resistance to subsequent infection with virulent human-type tubercle bacilli, compared with unvaccinated controls. G. pigs vaccinated with B.C.G. before infection developed less extensive and less active disease with a lower mortality rate, compared with unvaccinated animals or those given the irradiated vaccine.

—W. R. BETT.

COLLINS, C. H. (1953). **Differences between tubercle bacilli and other acid fast bacilli from human sources.**—*Acta tuberc. scand.* **28,** 340-348. [In English. Author's summary slightly modified.] 682

Sixty strains of atypical mycobacteria, including 53 from human sources and 7 named saprophytes, were grown in various media, in an attempt to assess the value of the latter in distinguishing between these organisms and *M. tuberculosis,* four strains of which were used as controls.

Some strains failed to grow in any media at 22°C.; others did not grow on digest media at either 37° or 22°C. Three strains besides the control organisms produced cords in oleic acid albumen broth. A characteristic of the atypical strains was a smooth, rapid growth in Tween-albumen broth which enabled them to be distinguished easily from tubercle bacilli. Mixed cultures of *M. tuberculosis* and atypical mycobacteria were demonstrated on 7 occasions by animal inoculation.

All except one of 35 unpigmented and a proportion of pigmented strains were resistant to streptomycin when compared with the H37 Rv tubercle bacillus.

JONES, M. A., LARSEN, A. B., VARDAMAN, T. H. & BAISDEN, L. A. (1953). **Studies on the fractionation of tuberculin and johnin. III. Fractionation of johnin proteins.**—*Amer. Rev. Tuberc.* **68,** 444-450. [French and Spanish summaries.] 683

A more specific johnin was obtained by concentration of the dilute culture filtrate, dialysis, extraction of the 'endo' solution (solution inside the membrane) with phenol, and fractionation of the phenol extract by addition of alcohol. The final fraction, the yield of which is approximately 2·5%, based on the nitrogen in the original culture filtrate, is more potent and more specific than Bureau of Animal Industry regular johnin.

—W. R. BETT.

I. BRYGOO, E. R. & RICHARD, C. (1952). Pouvoir chromogène de *Malleomyces pseudomallei.* [**Pigment production by** *Pfeifferella whitmori.*]—*Ann. Inst. Pasteur.* **83,** 822-825. 684

II. DE LAJUDIE, P. & BRYGOO, E. R. (1953). Contribution à l'étude du pouvoir pathogène du bacille de Whitmore. (Premier mémoire.) [**The pathogenicity of** *Pfeifferella whitmori.*] —*Ibid.* **85,** 99-106. 685

I. Pigment production is an interdependent character of *Pf. whitmori* and is variable according to the strains and the cultural conditions.

II. Study of the pathogenicity for labora-

tory animals of 15 strains of *Pf. whitmori* isolated from human beings revealed that puppies, rabbits and g. pigs were particularly susceptible, especially the latter which gave a fairly constant pathological picture. [See also *V.B.* **24**, 331-333.]—J.D.

WELLMANN, G. (1953). Auftreten von Rotlaufbakterien im Blut von experimentell mit Rotlauf infizierten Schweinen. [**Occurrence of *E. rhusiopathiae* in the blood of artificially infected swine.**]—*Dtsch. tierärztl. Wschr.* **60**, 366-369. **686**

E. rhusiopathiae could be isolated, shortly before death, from the blood of artificially infected pigs which developed peracute and acute types of infection, and 2–7 days after infection from the blood of those which developed urticaria-like lesions, but not from those which developed only " diamond skin " lesions.

—H. BEHRENS.

ULLBERG, S. (1953). **The action of penicillin *in vitro* against *Erysipelothrix rhusiopathiae*.**—*Nord. VetMed.* **5**, 677-699. [In English. German and Swedish summaries.] **687**

The penicillin sensitivity *in vitro* of 113 strains of *E. rhusiopathiae* ranged from 0·02 to 0·1 u/ml. The maximum killing rate was reached at 0·3 u/ml. and the time required to destroy 99·9% of the inoculum averaged 10 hours. From these results, the author suggested desirable blood levels and duration of treatment.—A. H. LINTON.

BARRALES, D. (1953). **Listeriosis in lemmings.**—*Canad. J. publ. Hlth.* **44**, 180-184. **688**

Thirty-five of 40 laboratory-bred lemmings used for parasitic investigation died within a 5-week period. The syndrome suggested the encephalitic type of listeriasis. *Erysipelothrix* (*Listeria*) *monocytogenes* was isolated.

—P. J. G. PLUMMER.

THOMPSON, J. J. & ADAMS, S. A. (1953). **Investigation of an outbreak of egg spoilage due to *Pseudomonas* spp.**—*N. Z. vet. J.* **1**, 113-114. **689**

A note on egg spoilage (" green rot ") caused by a species of *Pseudomonas*, with a discussion on the régime under which it occurred, and on preventive measures.

TUCKER, E. W. & JOHNSON, S. D. (1953). **Observations on treatment of udder infections and clinical mastitis with neomycin sulfate.**—*J. Amer. vet. med. Ass.* **123**, 332-334. **690**

Neomycin sulphate at a dosage of 0·5 g. injected *via* the teat canal of cows into quarters infected with *Pseudomonas* sp. was about 33% effective in gaining bacteriological cure. The drug was less effective against streptococci than penicillin, which the authors concluded is the antibiotic of choice for bovine mastitis caused by *Str. agalactiae*. Until bacterial diagnosis in the byre is achieved, neomycin will find a place in antibiotic mixtures countering several infections.—JOHN SEAMER.

ALEXANDER, H. E. & LEIDY, G. (1953). **Induction of streptomycin resistance in sensitive *Hemophilus influenzae* by extracts containing desoxyribonucleic acid from resistant *Hemophilus influenzae*.**—*J. exp. Med.* **97**, 17-31. **691**

Heritable resistance to streptomycin, similar to that which is observed with spontaneously occurring resistant mutants after treatment with streptomycin, was induced in streptomycin-sensitive *H. influenzae* by exposing them for 10 min. to desoxyribonucleic acid (DNA) isolated from streptomycin-resistant strains, these findings affording further evidence of the gene-like action of highly specific DNA.

—JOHN SEAMER.

CLARA, I. (1953). Osservazioni sui moderni metodi di profilassi e terapie delle colibacillosi. [**Prophylaxis and treatment of *Bact. coli* infection in calves.**]—*Atti Soc. ital. Sci. vet., Sanremo*, 1952. **6**, pp. 398-403. [French and Spanish summaries.] **692**

Bact. coli was isolated from the viscera of 21 out of 87, and from the faeces of 73 out of 104 calves affected with scours. The administration *per os* of 200 ml. serum from normal cattle with 4 g. chloramphenicol and 6 g. phthalylsulphathiazole, together with niacin, twice daily for the first three days of life yielded good results. It was also useful in diarrhoea of piglets.—R.M.

ROHRER, E. (1953). Studien über die verzögerte Mutation bei *Escherichia coli*. [**Inhibition of mutation in *Bacterium coli*.**]—*Schweiz. Z. allg. Path.* **16**, 105-111. [In German. English and French summaries.] **693**

The nucleoids of *Bact. coli*, isolated by a special technique, contain all the genetic factors and can multiply independently, so that a single bacterial cell is really ' multicellular '. Inhibition of mutation by irradiation may be explained by an irradiation dose causing mutation of only one of several nucleoids, it being possible to detect the resulting pure mutant only after several generations.—W. R. BETT.

ZAPF, K. (1953). Licht- und elektronenoptische Untersuchungen über die Ultraschallwirkung auf Bacterium coli unter Penicillineinfluss. **[Effect of ultrasonic waves on *Bact. coli* in the presence of penicillin.]**—*Zbl. Bakt. I. (Orig.).* **159,** 436-453. [English, French and Russian summaries.] 694

Suspensions of *Bact. coli* in liquid and solid media containing penicillin (5–20 u./ml.) were exposed under reproducible conditions for periods varying from 5 to 20 min. to ultrasonic waves (800 kc/sec.; I=0·3 to 10·0 W/cm²). Morphological changes, observed in detail both under the phase contrast and the electron microscope, were interpreted as follows: The action of ultrasonic waves alters both the membrane permeability and the internal structure of the bacterial cell, thereby raising its penicillin content. The nucleus may become displaced to one side of the bacterial cell so that when mitosis occurs, branching may result. This branching habit is dependent on the artificial displacement of the nucleus, and is not hereditary.

—G. P. MARSHALL.

NETER, E. & ZALEWSKI, N. J. (1953). **The requirement of electrolytes for the adsorption of *Escherichia coli* antigen by red blood cells.** —*J. Bact.* **66,** 424-428. 695

When *Bact. coli* antigens of sero-groups 026, 055 and 0111 were diluted with 5% glucose or sucrose solutions, r.b.c. of sheep, man, rabbit, fowl and duck failed to adsorb them; sheep r.b.c. were neither agglutinated nor lysed. When sodium chloride was added to the supernatant fluid, it modified r.b.c. for specific bacterial haemagglutination and haemolysis. Adsorption of the antigen took place in the presence of suitable concentrations of sodium chloride, potassium chloride, calcium chloride or sodium citrate. The concentration of the electrolytes required was found to vary inversely, within certain limits, with the amount of antigen employed.—F.E.W.

SCHMID, E. E. & VELAUDAPILLAI, T. (1953). **Salmonellae in Ceylon domestic animals.**—*Vet. Rec.* **65,** 641-642. [Authors' summary slightly modified.] 696

Nine *Salmonella* types, *i.e., S. paratyphi B, S. saint-paul, S. typhi-murium, S. virchow, S. newport, S. dublin, S. gallinarum, S. pomona* and *S. urbana,* were isolated from the faeces of apparently healthy domestic animals in Ceylon, positive cultures being obtained from one of 61 cattle, one of 33 dogs, one of 62 fowls, three of 48 goats, seven of 58 goats imported from India, and one of 60 pigs.

SAKAZAKI, R. (1952). **[Distribution of *Salmonella* in North Mie Prefecture. IV. Investigation into horses cattle, swine, dogs, fowls, rats, guinea-pigs and mice.]**—*Jap. J. vet. Sci.* **14,** 11-27. [English summary.] 697

S. isolated 47 strains of *Salmonella* (15 types) from 979 diseased or apparently healthy animals, comprising 73 horses, 50 cattle, 122 dogs, 265 fowls, 41 rats, 54 g. pigs and 228 mice in the North Mie Prefecture, Japan.

—KOGI SAITO.

DOBELLI, T. (1953). Ricerche sulla presenza di salmonelle in bovini sani regolarmente macellati. **[Examination of intestine, lymph nodes and gall bladder of healthy slaughtered cattle for salmonella.]**—*Atti. Soc. ital. Sci. vet., Sanremo,* 1952. **6,** pp. 549-551. [English and French summaries.] 698

Bacteriological examination for salmonella of samples of small intestine, mesenteric lymph nodes and gall bladder from 400 cattle at the municipal abattoir in Milan gave negative results in all cases.—I. MARTINI.

SIRONI, A. (1952). Contributo alla differenziazione rapida delle salmonelle nell'esame batteriologico delle carni. **[The rapid differentiation of *Salmonella* in bacteriological meat inspection.]**—*Clin. Vet., Milano.* **75,** 364-370. 699

An account on conventional lines of methods for the identification of salmonella in the course of meat inspection.—I. MARTINI.

ROSSI, C. & EMANUEL, C. (1953). Una grave enzoozia da salmonella in un allevamento di conigli. (Conseguenze sarcotossinfettive nel cane). **[Outbreak of *Salmonella typhi-murium* infection in rabbits on a large rabbit farm.]**—*Atti Soc. ital. Sci. vet., Sanremo,* 1952. **6,** pp. 599-604. [English and French summaries.] 700

An outbreak of *S. typhi-murium* infection caused 356 deaths on a rabbit breeding establishment comprising 1,530 animals. Of 100 sick rabbits given chloramphenicol at the rate of 0·05 g./kg. body wt. daily for 3 days, 85 recovered. Repeated injection of a formolized culture vaccine in the remainder of the animals finally controlled the outbreak.

Three dogs fed viscera from the dead rabbits contracted severe illness with diarrhoea and fever. *S. typhi-murium* was isolated from their faeces.—I. MARTINI.

TAYLOR, J., LOVELL, R. & MCCALL, A. M. [Principal speakers.] (1953). **Discussion on the epidemiology and treatment of *Salmonella***

infections in man and animals with special reference to *Salm. dublin.*—*Proc. R. Soc. Med.* **46,** 445-449. **701**

Taylor analysed the incidence in Gt. Britain of *Salmonella* infection in man. Only about 2% of cases were due to *S. dublin,* but these were more prolonged, with a higher mortality.

Lovell discussed the variation of incidence of *Salmonella* infection in different environments. He stressed the importance of concurrent infection with other organisms, and advocated a serological approach to the identification of carrier cows in outbreaks of food-poisoning.

McCall described an outbreak of *S. dublin* infection affecting about 600 school children. The milk supply was incriminated, and a carrier cow identified.—E. A. GIBSON.

BÉGUIN, S. & GRABAR, J. (1953). Études sur les formes rugueuses des *Salmonella.* [**Rough forms in** *Salmonella.*]—*Ann. Inst. Pasteur.* **84,** 723-734. **702**

Stable suspensions of " rough " *Salmonella* variants are best prepared by acetone treatment, drying and re-suspension of the organisms. Sera, prepared with rough cultures of whatever salmonella type, agglutinate specifically, and can be absorbed specifically by, rough organisms of any salmonella type. The " R " antigen is present also in acetone-dried " S " strains; but these cultures are agglutinated in " R " sera to a lower titre than the rough ones.—A. MAYR-HARTING.

ZINDER, N. D. & LEDERBERG, J. (1952). **Genetic exchange in salmonella.**—*J. Bact.* **64,** 679-699. **703**

S. typhi-murium, grown in the presence of agents such as weakly lytic phages, produced a filtrable agent capable of transferring hereditary traits, *e.g.* nutritional, fermentative and antigenic characters, and drug resistance, from one strain to another, the new characters remaining stable after many subcultures. The agent was resistant to certain bacterial disinfectants and to certain enzymes. It had a particle size of 0·1 μ.

The authors compared and contrasted this phenomenon with type transformation in *Haemophilus* and pneumococci, and with sexual recombination in *Bact. coli.*—F.E.W.

FARINA, R. (1953). La lattoagglutinazione rapida con antigene al tetrazolio nella diagnosi della brucellosi bovina. [**Rapid plate agglutination test with milk for the diagnosis of** *Brucella* **infection in cattle.**]—*Atti Soc. ital. Sci. vet., Sanremo,* 1952. **6,** pp. 564-567. [English and French summaries.] **704**

An account of comparative agglutination tests on an infected herd, using the tube, plate and ring tests.—I. MARTINI.

BENAZZI, P (1953). Osservazioni e ricerche sulle lattoreazioni brucellari dei caprini e degli ovini. [**Ring test and plate agglutination test with milk in the diagnosis of** *Brucella* **infection of sheep and goats.**]—*Atti Soc. ital. Sci. vet., Sanremo,* 1952. **6,** pp. 605-610. [English and French summaries.] **705**

Milk samples from infected sheep and goats that had given a positive reaction to an allergic test with brucellin, were examined (a) by the *Br. abortus* ring test and (b) by the rapid plate agglutination test. The ring test was of little or no value for individual samples, but was useful for bulked herd samples.—I. MARTINI.

BIGGI, P. (1953). Gli anticorpi bloccanti la sieroagglutinazione in ovini brucellotici. [**Blocking antibodies in the agglutination test for brucella infection in sheep.**]—*Atti Soc. ital. Sci. vet., Sanremo,* 1952. **6,** pp. 658-663. [English and French summaries.] **706**

The serum of sheep positive to the brucella agglutination test contains large amounts of blocking antibodies, which can be removed by using hypertonic (5%) instead of physiological saline.—G. P. MARSHALL.

SIEIRO, F. (1953). Prueba comparativa de inmunidad antibrucélica en bovinos con vacunas a cepa No. 19 por vías intradérmica y subcutánea. [**Immunity to brucellosis produced in cattle by Strain 19 vaccine by the intradermal and subcutaneous routes.**]—*Gac. Vet., B. Aires.* **15,** 111-122. **707**

100% and 75% of animals were protected when vaccinated with Strain 19 intradermally, and 50% and 11·1% when vaccinated subcutaneously, against inocula of 5 million and 50 million organisms, respectively.

—G. P. MARSHALL.

LIVE, I. & GIULIANI, L. A. (1953). **Protective effect of sera from animals treated with different brucella antigens upon brucella infection in mice.**—*J. Immunol.* **71,** 187-191. [Abst. from authors' summary.] **708**

Sera from cattle injected with ether-killed *Br. abortus* combined with " falba " (a lanolin-like substance) and mineral oil had a much higher protective action against lethal *Br. abortus* infection in mice than sera from cattle in-

jected with live Strain 19 vaccine and having similar agglutinin titres.

Sera from g. pigs injected with ether-killed *Br. abortus* combined with " falba " and mineral oil conferred considerable protection on mice in all of 4 tests. Sera from g. pigs injected with the same dose of ether-killed *Br. abortus* suspended in saline, gave slight protection in only one test.

Sera from g. pigs infected with virulent *Br. abortus* had variable protective activity.

Chronic infection in mice was not suppressed by any of the sera tested.

ABERNATHY, R. & SPINK, W. W. (1952). **The influence of cortisone and adrenocorticotrophic hormone on brucellosis. I. Cortisone in experimentally infected animals.**—*J. clin. Invest.* **31**, 947-957. **709**

SPINK, W. W. & HALL, W. H. (1952). **The influence of cortisone and adrenocorticotrophic hormone on brucellosis. II. Adrenocorticotrophic hormone (ACTH) in acute and chronic human brucellosis.**—*Ibid.* 958-967. [Authors' summaries modified.] **710**

I. Cortisone was administered to mice, g. pigs and rabbits having acute or chronic brucellosis due to *Br. abortus, Br. melitensis,* or *Br. suis.* Comparative histopathological studies of the liver and spleen were made, as well as bacteriological and immunological observations.

The most striking effects of cortisone were manifested in mice that had acute brucellosis due to *Br. suis* and that were pretreated with the steroid. Under these circumstances, a relatively mild infection in which the liver revealed granulomatous lesions without necrosis was converted into a fulminating and fatal illness with a marked increase in the number of hepatic lesions. Quite impressive was the necrosis and destruction of parenchymal tissue, and brucella organisms appeared to be multiplying in the hepatic cells and engorging the Kupffer cells.

In contrast to the abrupt changes induced in the acutely infected animals, cortisone did not appear to alter the course of the disease nor the tissue reactions in the chronically infected animals. It is suggested that an efficient immune mechanism protected the animals with chronic brucellosis against the enhancing effect of cortisone exhibited in the animals with acute infections.

Dermal hypersensitivity to brucella antigen was suppressed by cortisone in g. pigs and rabbits. Cortisone did not interfere with the appearance of brucella agglutinins in the acutely infected animals. The titre of agglutinins in animals with chronic brucellosis was not consistently altered by cortisone.

II. Adrenocorticotrophic hormone (A.C.T.H.) was administered to two patients with acute brucellosis and to five patients with chronic disease. The administration of A.C.T.H. to one of the patients with acute brucellosis, who was quite ill, was accompanied by a prompt and remarkable improvement although the blood cultures remained positive for *Br. abortus.* A.C.T.H. did not appear to have any significant effect on the clinical course of chronic brucellosis.

Specimens of liver and sternal bone marrow from one patient with acute brucellosis displaying granulomas showed no essential change in the type or degree of inflammation before and after the administration of A.C.T.H.

A.C.T.H. had no significant effect upon the titre of brucella agglutinins, but it did suppress dermal hypersensitivity to brucella antigens. The tendency of brucella organisms to cause a leucopenia and relative lymphocytosis was abolished by A.C.T.H.

The only therapeutic indication for cortisone or A.C.T.H. at the present time in acute or chronic brucellosis is in patients who are quite ill and toxic. And even then, treatment should be carried out for only a few days and simultaneously with antibiotic therapy.

LOOMIS, E. C. (1953). **Avian spirochetosis in California turkeys.**—*Amer. J. vet. Res.* **14**, 612-615. **711**

L. failed to transmit *Borrelia anserina* infection to healthy chickens and turkeys by allowing ticks, *Argas persicus,* collected from a farm where an outbreak had occurred, to feed on them; by intramuscular inoculation of a suspension of triturated ticks; and by introduction of whole ticks into the oesophagus. He discussed other possible means of transmission and suggested that infective bile-stained droppings of turkeys represent the most probable source of infection [see also MCNEIL *et al., V.B.* **19**, 2897].—F.E.W.

MALHERBE, W. D. & KASCHULA, V. R. (1953). **Leptospirosis in dogs in South Africa.**—*J. S. Afr. vet. med. Ass.* **24**, 163-169. **712**

Leptospira infection, not previously recorded from South Africa, was diagnosed in sick dogs by g. pig inoculation, by dark-field microscopy, serological tests, histological examination, and culture in artificial media. The latter method failed owing to the presence of contaminants. The available evidence indicates that the major role is played by *L. canicola.* In discussion on the paper it was stated that Weil's disease had

recently been diagnosed in two human beings in Cape Town and that it was suspected to occur in dogs in Durban.—F.E.W.

SCHOENHERR, K. E. & GÄDEKE, R. (1952). Morphologische Untersuchungen zur Serum- und Terramycintherapie der Canicola-Leptospirose des Goldhamsters. [**Morphological investigations of the serum and terramycin therapy of *Leptospira canicola* infection in hamsters.**]—*Z. ImmunForsch.* **109**, 488-502. 713

The authors studied the effect of treatment with immune serum in 136, and with terramycin in 107 hamsters, 4–6 weeks old, which had been infected experimentally with a virulent strain of *L. canicola*. Both methods of treatment were equally successful in that the infection was cured and none of the 243 animals died, but terramycin appeared to effect a more complete cure since it also prevented harmful sequelae of leptospirosis such as hypertrophic cirrhosis of the liver and interstitial fibrosis of the kidneys. There are 11 photomicrographs of hepatic and renal lesions.—E.G.

ŠALJINSKI, T. B. (1952). Dysenteria agnorum u NR Makedoniji. [**Lamb dysentery in Yugoslavia.**]—*Vet. Glasn.* **6**, 464-475. [In Croat. French summary.] 714

Lamb dysentery due to *Cl. welchii*, Type B occurs every year mainly in Southern Yugoslavia, and causes losses of more than 25% in some flocks.—I. MARTINI.

TAVONI, V. (1953). Sul potere leucolitico della fossina tetanica studiato in alcune specie di mammiferi domestici. (Ricerche sperimentali.) [**Lytic action of tetanus toxin on the leucocytes of domestic animals.**]—*Atti Soc. ital. Sci. vet., Sanremo*, 1952. **6**, pp. 616-625. [English and French summaries.] 715

Suspensions of leucocytes obtained from members of all the domestic mammalian species underwent broadly similar degrees of lysis in the presence of rising doses of tetanus toxin. T. therefore concluded that differences in species susceptibility must be due to other factors.

—G. P. MARSHALL.

GLEISER, C. A. (1953). **Mucormycosis in animals. A report of three cases.**—*J. Amer. vet. med. Ass.* **123**, 441-445. 716

The first case involved a 3½-year-old spayed English setter in which the only abnormality revealed at autopsy was a ' degenerated ' left kidney. Histological examination led to a diagnosis of granuloma of the left kidney due to *Mucor* with sub-acute interstitial nephritis of the right kidney. The second case was in a 3-month-old male terrier in which autopsy showed a large gastric ulcer and diffuse granulomatous encephalitis of the cerebral and cerebellar cortex. In the third case extensive caseocalcareous lesions in the bronchial and mediastinal lymph nodes of a yearling heifer were noted by an inspector at an abattoir.

In all three cases coarse, branching, non-septate hyphae morphologically compatible with a species of *Mucor* (in the second case, at least, possibly *M. corymbifer* [*Absidia corymbifera*]) was found associated with the granulomatous tissue and as there was no evidence of other aetiological agents the cases were all considered to be authentic examples of mucormycosis.

—G. C. AINSWORTH.

BRUINS, B. (1953). Een allergisch ziektebeeld bij het rundvee tengevolge van contact met schimmelig voer en schimmelig strooisel. [**Allergy in cattle caused by contact with mouldy fodder and mouldy litter.**]—*Tijdschr. Diergeneesk.* **78**, 787-795. [English, French and German summaries.] 717

Many cases of illness and eight deaths occurred among cattle in 8 different herds that had been fed mouldy hay, straw or chaff. *Aspergillus fumigatus* was isolated from some samples of forage. The symptoms were coughing, dyspnoea and nasal bleeding, sometimes complicated by tympanites or haematuria.

The P.M. findings were pulmonary hyperaemia, oedema of the lungs, and haemorrhages of the respiratory tract.—C. A. VAN DORSSEN.

STUDDERT, T. C. (1953). **Farmer's lung.**—*Brit. med. J.* June 13th, 1305-1309. 718

This condition occurring in agricultural workers particularly in North-West England, is associated with the inhalation of dust from mouldy hay or corn. Within 12 hours, there is a sudden onset of intense breathlessness, cyanosis, cough and slight fever, and X-ray of the lungs reveals a characteristic picture. Complete spontaneous recovery occurs in 1–2 months, but some residual fibrosis and emphysema has occasionally been noted. S. reported 6 proved and 6 probable cases in which sputum examination yielded a mixed growth of fungi. " Broken-wind " in horses, fed mouldy hay, may be a similar condition and can be largely prevented by damping the hay before feeding. S. considers that the condition is a non-specific interstitial lung reaction to some material in the fungus-laden hay rather than a true fungous infection of the lungs.—A. ACKROYD.

La Touche, C. J. (1953). **Some clinical and microscopic features of *Microsporum canis* Bodin infection of the skin and its appendages as it occurs in the cat.**—*Vet. Rec.* **65,** 680-681. 719

The author emphasized that the clinical manifestations of microsporosis in cats caused by *M. canis* are often inconspicuous and that a Wood lamp is an indispensable aid in the examination of cats for this condition. Crusting, as obvious reddish brown crusts, was observed in only 4 (adult cats) of 45 infected cats and kittens; depilation was stated to be rare in the Leeds city district, and scaling often overlooked. In addition to the hair, the whiskers or eyebrow bristles were sometimes involved and the author recorded what he believed to be the first case of claw infection by *M. canis*.

He gave a brief account of the microscopic features of the infection and illustrated in an excellent series of photomicrographs the infection of skin scales, hair, and whiskers.

—G. C. Ainsworth.

Daniels, G. (1953). **The digestion of human hair keratin by *Microsporum canis* Bodin.**—*J. gen. Microbiol.* **8,** 289-294. 720

In an attempt to supplement the visual criteria for keratin digestion of human hair by *M. canis*, D. was able to detect by chromatography all the amino-acids occurring in hair (as determined by acid hydrolysis) in the medium after growth of the fungus on human hair in a glucose/non-nitrogenous mineral salt solution.

—G. C. Ainsworth.

Saurat, P. & Lautié, R. (1953). Sur un cas d'actinomycose cérébrale du chien. [**Cerebral actinomycosis in dogs.**]—*Rev. méd. vét.* **104,** 264-274. 721

The greater part of this paper is devoted to an account of the morphological, cultural, biochemical, and pathogenic characters of an aerobic actinomycete isolated from a case of cerebral actinomycosis in an 11-month-old dog. The organism, which could not be identified with certainty, and which is possibly previously undescribed, showed resemblances to both *Nocardia asteroides* and to *Streptomyces galtieri*.—G. C. Ainsworth.

Erikson, D. & Porteous, J. W. (1953). **The cultivation of *Actinomyces israelii* in a progressively less complex medium.**—*J. gen. Microbiol.* **8,** 464-474. 722

Five human strains and one porcine strain of *A. israeli* were trained to grow in a medium composed of 99 vol. of 1% casein hydrolysate +1 vol. of heart broth, 0·5% of glucose being added to the mixture. Continuous growth of *A. israeli* in this relatively simple medium depends on separate sterilization of the components of the medium under adequate but milder than usual conditions, frequent subculturing, and good anaerobic conditions. Repeated attempts to obtain growth in the absence of heart broth from the medium were unsuccessful.

—G. C. Ainsworth.

Lotti, L. & Radicioni, E. (1953). Indagini batteriologiche sui linfonodi meseraici di bovini, equini e suini sani. [**Bacteriological examination of the mesenteric lymph nodes of healthy slaughtered cattle, horses, and swine.**]—*Atti Soc. ital. Sci. vet., Sanremo,* 1952. **6,** pp. 551-556. [English and German summaries.] 723

Bacteriological examination of material sampled at an abattoir in Perugia from the mesenteric lymph nodes from 100 horses, 100 cattle and 100 pigs, all of them slaughtered for food, yielded one strain of *Salmonella abortus-equi* from one of the horses and one strain of *E. rhusiopathiae* from one of the pigs.

—I. Martini.

Rivkine, A. (1953). Potentialités respiratoires des populations dites aérobies-anaérobies facultatives, étudiées chez *Esch. coli* et *Staph. aureus*. [**An investigation into the respiratory potentials of "facultatively anaerobic" strains of *Bact. coli* and *Staph. aureus*.**]—*Schweiz. Z. allg. Path.* **16,** 707-727. [In French. English and German summaries.] 724

The oxidative enzyme apparatus was studied in aerobic and facultatively anaerobic strains of *Bact. coli* and *Staph. aureus*. From a comparison of total cell counts with viable counts of cultures incubated aerobically and anaerobically, it was concluded that each cell is a potential carrier of both respiratory enzyme systems.—W. R. Bett.

Banič, S. (1953). Über die Hypothese von den reversen Mutationen der Bakterien. [**The hypothesis of reversal mutation in bacteria.**]—*Schweiz. Z. allg. Path.* **16,** 112-117. [In German. English and French summaries.] 725

B. described experiments which justify the conclusions that in resistant mutants (primarily resistant bacterial strains) resistance is stable; that decrease of *in vitro* induced resistance from a high to a low level or nearly to original sensitivity, results not from retrograde mutations, but from the fact that the enhanced resistance of the strains in question was only a persistent variation.—W. R. Bett.

Sirotnak, F. M., Doetsch, R. N., Brown, R. E. & Shaw, J. C. (1953). **Amino acid metabolism of bovine rumen bacteria.**—*J. Dairy Sci.* **36**, 1117-1123. [Authors' summary copied *verbatim*.] 726

Of 22 amino acids tested, aspartic acid, glutamic acid, serine, arginine, cysteine, and cystine were found to be attacked by suspensions of mixed rumen microorganisms. The principal degradation products detected were carbon dioxide, ammonia, acetic acid, propionic acid, and butyric acid. The optimum pH for amino acid dissimilation appeared to be 6·9. A marked enhancement of amino acid dissimilation by a fermentable carbohydrate was demonstrated. The presence of maltose, cellobiose and glucose significantly increased the production of ammonia and carbon dioxide from aspartic acid. The production of ammonia from glutamic acid, serine, arginine, cysteine, and cystine was similarly affected by the presence of maltose.

Williams, V. J., Nottle, M. C., Moir, R. J. & Underwood, E. J. (1953). **Ruminal flora studies in the sheep. IV. The influence of varying dietary levels of protein and starch upon digestibility, nitrogen retention, and the free microorganisms of the rumen.**—*Aust. J. biol. Sci.* **6**, 142-151. 727

On diets composed of oat chaff, together with wheat starch and wheat gluten at three levels of each, the concentration of free microorganisms in the rumen was found to be markedly affected both by the levels of dietary protein and of dietary starch, but the effect of each was greatly influenced by the proportion of the other in the diet.

On low-protein, but not on higher-protein diets, increases in the intake of starch resulted in highly significant reductions in rumen counts as well as a marked change in the types of organisms present. Dry matter digestibility, however, was not affected. Increases in protein intake resulted in highly significant increases in rumen bacterial counts on all except starch-free diets.

These increases were associated with significant increases in dry matter digestibility and in true digestibility of protein.

The authors concluded that the proportion of total dietary protein converted to bacterial protein in the rumen diminishes sharply as the intake of protein increases, but the proportion of added dietary protein converted is relatively constant.—R. L. Reid.

See also abstr. 909 (*S. dublin* food poisoning in man); 910 (pasteurization of eggs to eliminate salmonella); 921 (occurrence of bacteria resistant to antibiotics, in bull semen); 984 (prevention of fungous growth in optical instruments).

DISEASES CAUSED BY PROTOZOAN PARASITES

Tobie, E. J. & von Brand, T. (1953). **The development of arsenic resistance in *Trypanosoma gambiense* and its influence on parasitemia.**—*J. infect. Dis.* **92**, 132-138. [Abst. from authors' summary.] 728

A comparison of the infectivity and pathogenicity of an arsenic-resistant strain of *T. gambiense* with the normal strain from which it was developed showed that white mice, white rats, and g. pigs infected with the resistant strain survived significantly longer than those infected with the normal strain. Two patterns of infection were recognized, a progressive type and a relapsing type. Regardless of strain, all mice developed the progressive pattern and g. pigs the relapsing pattern. However, rats infected with the normal strain developed only infection of the progressive type, while in those infected with the resistant strain both types occurred, with the relapsing pattern predominating. The authors discussed the reason for this change in the pattern of infection and suggested that (1) the drug-resistant strain may have become less virulent by a reduced ability to multiply or to produce the same amount of toxic products as the normal strain, or that (2) quantitative and qualitative changes in the metabolism of the parasite during the development of drug resistance led to a change in the immune response of the host.

Desowitz, R. S. & Watson, H. J. C. (1953). **Studies on *Trypanosoma vivax*. VI. The occurrence of antibodies in the sera of infected sheep and white rats, and their influence on the course of infection in white rats.**—*Ann. trop. Med. Parasit.* **47**, 247-257. [Authors' summary modified.] 729

Sera of sheep in the later stages of infection with *T. vivax* are devoid of supplementary action in facilitating infection of white rats with the same species. The presence of trypanocidal and agglutinating antibodies in infected sheep sera is demonstrable *in vitro*. The absence of supplementary action of infected sheep serum is believed to be due to the presence of these antibodies.

Trypanocidal and agglutinating antibodies in infected sheep serum are not demonstrable in the early stages of infection but increase in titre

as the infection progresses. The antibodies present in sheep sera do not exert any demonstrable effect on co-existing trypanosomes or on trypanosomes obtained from sheep in the early stages of infection with the homologous strain. They have, however, a powerful action on the trypanosomes of the homologous strain in rats.

Antibodies present in the sera of infected sheep are active both against washed trypanosomes from the blood from which the sera were obtained and against washed trypanosomes taken from the blood of sheep infected with the homologous strain. In neither case are they active against unwashed trypanosomes. These marked differences in the activity of such antibodies suggest the presence of an antibody-protection factor, which protects the trypanosomes present in sheep's blood against antibodies developed against them. Available evidence suggests that this factor is identical, or associated, with the substance present in clean sheep serum which facilitates infection of white rats with *T. vivax*. The antibodies described appear to be specific for the strain of *T. vivax* against which they have been developed.

The authors described the heat lability and other characteristics of the antibodies.

Trypanolytic antibodies are demonstrable in the sera of rats convalescent from infection with *T. vivax* (unsupplemented line). They are specific for the trypanosomes of the homologous line in rats, but are inactive against trypanosomes present in sheep infected by intravenous inoculation of rat's blood of the same line.

THIENPONT, D. (1953). **The curative action of 621 C 47 in the infection of *Trypansoma vivax* in bovines.**—*Bur. interafr. Tse-tse.* B.P.I.T.T. No. 199/T. pp. 9. [Mimeographed.] 730

Twenty-five cattle naturally infected with *T. vivax* were injected with " 621 C 47 " (2:7-diamino-9-thienyl-10-methylphenanthridinium bromide) at a dosage of 2 mg./ kg. live wt. Intramuscular and subcutaneous injections produced local reactions. All cases were negative after 24 hours, but eight relapses occurred between the 59th and 128th days under conditions which precluded re-infection. T. concluded that the drug is not likely to prove of much practical value.—D. POYNTER.

CILLI, V. & BATTELLI, C. (1953). Esperimenti di terapia con bromuro di dimidium (phenanthridinium compound 1553) nella tripanosomiasi da *Tr. vivax-cazalboui* dello zebù eritreo. **[Treatment of trypanosomiasis in zebu cattle in Eritrea with dimidium bromide.]**—*Zooprofilassi.* **8,** 169-182. [English, French and Spanish summaries.] 731

The authors tested the activity of dimidium bromide against *T. vivax-cazalboui* in naturally and artificially infected zebu cattle in Eritrea. They found that when injected s/c or i/m at a dosage of 3 mg. per kg. the drug caused a severe local reaction. Toxic but not lethal symptoms occurred in animals injected i/v with 3·5 mg. per kg. and kept under unfavourable conditions. Using a routine i/v dosage of 3 mg. per kg. good results were obtained in naturally infected animals, and in artificially infected animals treated within a few days of the appearance of trypanosomes in the blood.

—I. MARTINI.

MCRARY, W. L., BEAVER, E. L. & NOBLE, E. R. (1953). ***In vitro* effects of prodigiosin and other antibiotics on *Trypanosoma cruzi*.**—*Exp. Parasit.* **2,** 125-128. [Authors' summary modified.] 732

In a study of the *in vitro* effects of nine antibiotics on a single strain of *T. cruzi,* polymyxin B and prodigiosin were significantly more effective than aureomycin, bacitracin, chloramphenicol, fumagillin, neomycin, subtilin, and terramycin. Prodigiosin was 100% inhibitory at the 10–25 μg./ml. level in 30 min. and at the 1 μg./ml. level in 48 hours. Polymyxin B was effective at a level of 100 μg./ml. but only after several hours. There appeared to be no synergistic action between prodigiosin and polymyxin B.

DELAPPE, I. P. (1953). **Studies on *Histomonas meleagridis*. II. Influence of age of original inoculum and pH on growth in various media.**—*Exp. Parasit.* **2,** 117-124. [Abst. from author's summary.] 733

D. studied the growth of *H. meleagridis,* and the accompanying changes in pH. Maximum growth in an unbuffered medium occurred between the 4th and 8th days. Growth in a phosphate-salt system buffered at pH 7·1, 7·4, and 8·1 was inferior to that occurring in buffered Laidlaw's medium. The age of the cultures used as inocula was found to influence subsequent growth of the organism.

ISSHIKI, O. (1950). **On the *Globidium* in the mucous membrane of small intestine of a goat (a case hitherto unrecorded in Japan).**—*Sci. Rep. Fac. Agric. Naniwa Univ.* No. 1. pp. 153-156. [In English.] 734

The author described a single parasite, found in the wall of the small intestine of a goat raised in Osaka, which was identified as a

species of *Globidium*. The occurrence of such a parasite in goats had not previously been reported from Japan.—F.E.W.

RAMANUJACHARI, G. & ALWAR, V. S. (1953). **A case of *Leucocytozoon* infection in a *Desi* fowl in Madras.**—*Indian vet. J.* **30**, 93-96. [Abst. from authors' summary.] 735

A report of *Leucocytozoon* infection in an indigenous fowl, stated to be the first recorded instance in that species in India. From the published literature, the Far East appears to be the focus of this infection in fowls.

Definite clinical symptoms were noted in this bird probably attributable to the protozoon.

The authors compared the organism with other species in fowls. It was smaller than that described by Kuppuswamy [*V.B.* 7, p. 171].

A sheathed microfilaria was also found in the same smear.

BEVERIDGE, E. (1953). ***Babesia rodhaini*: a useful organism for the testing of drugs designed for the treatment of piroplasmosis.**—*Ann. Trop. Med. Parasit.* **47**, 134-138. [Author's summary modified.] 736

B. rodhaini is a piroplasm of rodents transmissible to white mice. The author described the parasite, its course of infection in the white mouse and its transmission to white rats. He described the use of *B. rodhaini* in two types of chemotherapeutic test devised for the screening of drugs for the treatment of piroplasmosis.

Of a number of diamidines, antibiotics and acridine derivatives tested in this way, the most active was 2:8-diamino-10-methylacridinium chloride, one of the constituents of acriflavine.

BROCK, W. E., PEARSON, C. C. & KLIEWER, I. O. (1953). **High-level aureomycin dosage in anaplasmosis.**—*Amer. J. vet. Res.* **14**, 510-513. 737

Of 6 cattle with anaplasmosis which were given repeated s/c injections of aureomycin at various dosages, one adult carrier failed to transmit the infection on subinoculation into clean cattle for 296 days; a similar carrier given the same dosage continued to transmit infection on subinoculation except for a short period. Those given less than 30 g. of aureomycin transmitted anaplasmosis on each subinoculation, whereas those given 30 g. or more passed through a negative phase during which infection could not be transmitted by subinoculation. The authors discussed these findings.—F.E.W.

KUNERT, H. & SCHMIDTKE, L. (1953). Zur Übertragung von Toxoplasma gondii durch Fliegen. **[Transmission of *T. gondii* by flies.]** —*Z. Hyg. InfektKr.* **136**, 163-173. 738

T. gondii infection was produced experimentally in mice by i/p inj. of faeces and saliva of *Stomoxys calcitrans, Calliphora erythrocephala, Musca domestica* and *Lucilia sericata* which had been allowed to feed on infected blood. The authors were unable to infect mice by feeding them intestines and faeces of infected flies. They discussed the role of arthropods as transmitters of toxoplasmosis.—E.G.

MILLER, L. T. & FELDMAN, H. A. (1953). **Incidence of antibodies for toxoplasma among various animal species.**—*J. infect. Dis.* **92**, 118-120. [Authors' summary copied *verbatim*.] 739

Antibodies for toxoplasma were detected, with frequency, among street cats and dogs and laboratory-bred guinea pigs. They were not found at all among laboratory-bred rats and with slight frequency among laboratory-bred rabbits. A large number of cattle comprising one herd which had been maintained for some time for experimental purposes had antibody, but of such low concentration as to be of questionable significance.

FELDMAN, H. A. (1953). **The clinical manifestations and laboratory diagnosis of toxoplasmosis.**—*Amer. J. trop. Med. Hyg.* **2**, 420-428. 740

F. gave details of laboratory procedures and serological tests for the diagnosis of toxoplasmosis and discussed literature on the symptomatology of the disease in man, sheep, cat, dog, hare, monkey and pigeon. Intestinal ulceration is common in dogs and toxoplasmosis may be confused with distemper, leptospirosis and pneumonia.—JAS. G. O'SULLIVAN.

EYLES, D. E. & COLEMAN, N. (1953). **Synergistic effect of sulfadiazine and daraprim against experimental toxoplasmosis in the mouse.**—*Antibiot. & Chemother.* **3**, 483-490. [Spanish summary p. 556.] 741

Sulphadiazine added to the diet at the rate of 5 mg. %, reduced the protective dose of "daraprim" [2:4-diamino-5-(4'-chlorophenyl)-6 ethyl pyrimidine] against toxoplasmosis in mice from 9 mg. % to 0·37%. The joint action was not additive but synergistic.

—JAS. G. O'SULLIVAN.

ERICHSEN, S. & HARBOE, A. (1953). **Toxoplasmosis in chickens. II. So-called gliomas observed in chickens infected with toxo-**

plasms.—*Acta path. microbiol. scand.* 33, 381-386. [In English.] 742

The authors described three cases of multiple glioma in fowls, two of which were found in young birds inoculated with toxoplasms when 11 weeks old and killed 48 days later when they appeared to be in good health. The other case was in a sick fowl (slaughtered *in extremis*) from a flock in which toxoplasmosis was endemic. They doubt that these glioma are true neoplasms; they consider them to be a chronic focal disseminated encephalitis, possibly caused in some cases by toxoplasms.—F.E.W.

CORLISS, J. O. (1953). **Comparative studies on holotrichous ciliates in the Colpidium-Glaucoma-Leucophrys-Tetrahymena group. II. Morphology, life cycles and systematic status of strains in pure culture.**—*Parasitology.* 43, 49-87. 743

Twenty-six axenic strains of holotrichous ciliates were investigated by silver-nitrate impregnation. The only valid genus present was considered to be *Tetrahymena* and to it were attached four species:—*T. pyriformis, T. vorax, T. patula* and *T. faurei.*

C. described the life-cycles and discussed the problem of amicronuclear strains. Other material revealed the presence of the genera *Colpidium* and *Glaucoma.*

—JAS. G. O'SULLIVAN.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

HECKLY, R. J. (1953). **A preliminary report on the purification of foot-and-mouth disease virus by serological methods.**—*J. Immunol.* 71, 52-54. [Author's summary slightly modified.] 744

Repeated injections of a fraction from normal bovine tongue epithelium into rabbits elicited the production of precipitins. It was observed that most of the infectivity of purified virus preparations was also precipitated by the antiserum to normal bovine tissue. Quantitative precipitin tests indicated that at least 90% of the most highly purified virus preparation tested consisted of material serologically indistinguishable from normal host tissue. Virus produced in g. pigs did not react with the antiserum. Although mixtures of normal bovine tissue antigen and g. pig virus gave comparable serological precipitates, most of the infectivity of the g. pig virus remained in the supernatant serum. The results suggested that F. & M. disease virus may possess certain serological characteristics of the host in which it was produced.

DIMITRIJEVIĆ, V. (1953). Neka zapažanja kod primene domaće adsorbat vakcine slinavke i šapa s narocitim obzirom na lokalne i opšte reakcije. **[Reaction of cattle to a Yugoslav foot and mouth disease vaccine.]**—*Vet. Glasn.* 7, 18-22. [In Croat. English summary.] 745

The swelling caused by the injection of locally manufactured, monovalent F. & M. disease vaccine had the average size of two goose eggs when the full dose (30 ml.) was administered. During the first seven days after vaccination there was a daily reduction in milk yield varying between 0·5 and 4 litres.

—I. MARTINI.

BURTON, H. W. (1950). **Rabies in a tiger—two proved instances.**—*J. Bombay nat. Hist. Soc.* 49, 538-541. 746

A brief note giving an account of the circumstances in which rabies was observed in two tigers in Assam.

In one case, in 1943, a tigress attacked one of three men cycling in the evening along a dark road and mauled him badly. The other two managed to drive the animal away, one holding his cycle up against the tigress which bit it and clawed it. Further along the road the tigress attacked a cart drawn by buffaloes and laden with very long mats which extended well over the buffaloes. Men on the cart, sheltered by the mats, managed to drive it away. Shortly afterwards, other similarly laden carts came along and the tigress attacked one of them, badly mauling the driver; in the confusion three men were clawed and bitten.

Early next morning a woman and a girl were both badly mauled, as was a wood cutter in the middle of the day.

On the following day the tigress appeared on a road close to some people and walked off. Later that day it was again seen on a road and walked past a motor car. The occupant had been looking for it and shot it. There were reports that the tigress had forced its way into houses in coolie lines. Negri bodies were found in the brain of this tigress in a specimen sent to the Pasteur Institute at Shillong.

Altogether 18 persons were injured by this tigress and 11 of them died of their wounds.

A second case occurred in 1950, when the tigress was stated to have gone from house to house in a village, attacking, mauling, and biting. It injured 14 persons, one of whom died.

The tigress was killed and Negri bodies were demonstrated in its brain at the Pasteur Institute, Shillong.

Some details are given of a third case in a tiger, stated to have killed 7 coolies and itself to have been killed in a fight with a wild buffalo.

The abnormal behaviour of these tigresses is noteworthy.

OESHMUKH, P. L. (1949). **Clinical hydrophobia without contact with rabies-transmitting animal.**—*Indian med. Gaz.* **84,** 546-548. 747

An account of the fatal illness in two human beings who exhibited spasms when they saw water. On this symptom the author diagnosed the disease as rabies, though there was no history of any contact with a rabid animal.

DOGRA, J. R. (1953). **Studies on antirabic vaccines. IX. Further observations on a single dose prophylactic canine vaccine.**—*Indian vet. J.* **30,** 87-92. [Author's conclusions modified.] 748

D. described a 20% sheep brain phenol-killed rabies vaccine for use in dogs.

It is innocuous and experience with scores of inoculations in dogs over some years has shown no untoward reactions.

Immunity tests in mice following single-dose vaccination showed a high degree of protection as assayed by a modified Habel technique.

Repeated assays of vaccine stored at 5·8°C. showed that it keeps well for months. From the data available, it is suggested that the expiry period of this vaccine be fixed at six months.

MCCREA, J. F. & DURAN-REYNALS, F. (1953). **Inactivation of vaccinia virus by a diffusible component from hydrolyzed hyaluronic acid.**—*Science.* **118,** 93-95. 749

Inactivation of vaccinia virus after inoculation with a diffusible component from hydrolysed hyaluronic acid was demonstrated by intradermal inoculation into rabbits, in cell culture, and by the haemagglutination reaction. The virus was reactivated by adding hyaluronidase.

The authors suggested that the substance concerned is glucuronic acid, which behaved almost identically and that it may play a part in resistance to infection.—IAN DAVIDSON.

SÉVIN, A., BOSSUT, J., D'HALLUIN, G. & CHÉNET, C. (1948). Utilisation de la pénicilline et de la tyrothricine pour la purification du vaccin jennérien de génisse. **[Penicillin and tyrothricin for the purification of smallpox vaccine.]**—*Ann. Inst. Pasteur, Lille.* **1,** 209-221. 750

Treatment of rabbits or calves with penicillin or tyrothricin during the preparation of smallpox lymph gave a product which had a low bacterial content but retained its virus potency. This method of producing purified vaccine lymph was more effective than treatment of the lymph *in vitro* with the antibiotics.

—E. G. WHITE.

CAIRNS, H. J. F. & MASON, P. J. (1953). **Production of influenza A virus in the cells of the allantois.**—*J. Immunol.* **71,** 38-40. [Authors' conclusions copied *verbatim.*] 751

At the end of the first cycle of multiplication in the allantois after a saturating inoculum, influenza A virus becomes haemagglutinating about one hour before it appears in the allantoic fluid.

This delay in the release of virus is largely, if not entirely, due to delay in elution from the cell surface, as it is abolished by preliminary artificial receptor destruction. Any intracellular stage in the release of haemagglutinin, if obligatory and of constant duration, must last less than two minutes. There is however no evidence that any of the virus found in suspensions of the allantoic membrane is intracellular.

A small fraction of the yield of virus is not released from the allantoic membrane.

TAYLOR, C. E. (1953). **Interference between influenza and equine encephalitis viruses in tissue culture.**—*J. Immunol.* **71,** 125-133. [Author's summary modified.] 752

Influenza A virus interfered with both Western and Eastern equine encephalitis viruses in chorioallantoic tissue cultures. Partial interference between influenza and Western equine encephalitis viruses was also demonstrated in tissue cultures of chick embryo skin and muscle, tissue in which growth of influenza virus is poor.

Influenza virus caused a transient increase of cellular proliferation in tissue cultures of chorioallantoic membranes. This phenomenon was most evident after 3 to 5 days' incubation, but the virus infected tissues ultimately died more rapidly than uninfected control cultures.

Under conditions of these experiments, mumps virus had a distinct cytopathogenic effect on amniotic tissues, almost as severe as that of the Western equine encephalitis virus. This prevented the demonstration of interference between these two viruses.

OCHI, Y. (1953). L'encéphalite japonaise des porcs. **[Japanese B encephalitis in pigs.]**—

Bull. Off. int. Epiz. 40, May. pp. 504-517. [English summary.] 753

Japanse encephalitis virus has been identified as a cause of widespread and serious losses in pigs in Japan; it also affects cattle, sheep and goats as well as human beings and horses. It causes a non-suppurative encephalitis in young pigs, but in animals over 3–6 months old nervous signs are absent unless the virus is inoculated intracerebrally, although antibodies appear in the serum and an encephalitis may be demonstrable histologically. In the sow it causes stillbirth or abortion at full term, the dead foetuses showing various stages of mummification. The field disease can be reproduced experimentally, but it is necessary to use recently isolated strains to produce abortion.

Recovered animals have virus-neutralizing and complement-fixing antibodies in their serum. Formolized vaccines have given almost perfect protection in natural and experimental infections. All strains of the virus recovered are apparently immunologically identical.

—J. T. Done.

Halverson, W. L., Longshore, W. A., Jr. & Peters, R. F. (1953). **The 1952 encephalitis outbreak in California.**—*Publ. Hlth Rep., Wash.* 68, 369-377. 754

In this preliminary report, the authors outlined the organization and plan used in conducting the emergency epidemiological and mosquito control programme in the 1952 outbreak of encephalitis in California. The main problems were administrative.—W. S. Marshall.

Sanders, M., Kabara, J. J., Soret, M. G. & Akin, B. A. (1953). **Some effects of certain resorcinol derivatives on Eastern equine encephalomyelitis virus. Factors influencing *in vitro* screening technic.**—*Proc. Soc. exp. Biol., N.Y.* 82, 369-373. 755

Dilutions 1:100 of virus emulsion were mixed with equal quantities of a range of concentrations of each of the 14 compounds tested, and incubated. To test inactivation, the mixtures were inoculated intracerebrally into mice. Inactivation was influenced by the temperature of incubation, the concentration of the dye, the addition of protein and, within the pH range 6–9, slightly by the pH. Of various derivatives those containing iodine proved most active in this *in vitro* screening test, an effect which is not due to free iodine.—A. Mayr-Harting.

Randall, C. C., Ryden, F. W., Doll, E. R. & Schell, F. S. (1953). **Cultivation of equine abortion virus in fetal horse tissue *in vitro*.**—*Amer J. Path* 29, 139-153. [Abst. from authors' summary.] 756

By means of tissue culture, the virus of equine abortion was propagated through 9 serial passages in foetal horse spleen by the Maitland method. Intranuclear inclusions were produced regularly in the spleen and lung of horse foetuses with excellent preservation of tissue. Inclusions were not observed in tissue explanted in plasma by the coverglass method.

Two out of 10 pregnant mares which were inoculated with eighth passage tissue-culture virus aborted. High levels of complement-fixing antibody were present in the serum of all these mares.

The complement-fixing activity of tissue-culture virus was demonstrated, and showed that the virus in question had been propagated. In comparing original virus with eighth passage tissue-culture virus as antigen, it was shown that the latter was able to fix complement at a dilution $10^{15 \cdot 4}$ times that of the former. This represents a $10^{12 \cdot 9}$ fold increase in the amount of virus over the original inoculum.

These experiments indicated that the specificity of the virus of equine abortion was maintained in tissue culture without apparent modification of its original properties.

Piercy, S. E. (1953). **A review of present methods of immunization against rinderpest in Kenya.**—*E. Afr. agric. J.* 18, 169-175. 757

P. discussed the use of goat-passaged rinderpest virus vaccine (K.A.G.), lapinized vaccine and inactivated spleen vaccine in Kenya. The advantage of the first is that it can be used by the European stockowner, whereas the fragility of the other two necessitates professional administration. K.A.G. is particularly useful for indigenous cattle with some inherent resistance, and lapinized vaccine for highly susceptible stock. P. described methods of preparation and outlined the remaining problem of calfhood immunity.—W. S. Marshall.

Lalanne, A. (1952). Prophylaxie médicale de la peste bovine au Soudan français avec le virus capripestique. **[Use of goat-virus rinderpest vaccines in the French Sudan.]**—*Bull. Serv. Elev. Industr. anim. A.O.F.* 5, Nos. 2-3-4. pp. 43-54. 758

An account of the results of five years' work. L. described the methods of virus production, its use and the difficulties and set-backs encountered, but despite its admitted imperfections, the immunization of cattle with goat-virus rinderpest vaccine shows genuine advan-

tages over older methods. Moreover, it is decidedly more economical.—D. S. Rabagliati.

Schellner, H. (1953). Rapport sur les résultats acquis lors de vaccinations préventives contre la peste porcine avec le vaccin au cristal-violet. **[Crystal violet vaccine in prevention of swine fever.]**—*Bull. Off. int. Epiz.* **40**, May. pp. 111-116. [Abst. from English summary.] 759

S. reported satisfactory results obtained, on farms exposed to swine fever, by preventive vaccination of some 80,000 pigs with a crystal violet vaccine prepared according to Dorset's method [*V.B.* **8**, p. 92].

Bankowski, R. A., Wichmann, R. & Kummer, M. (1953). **A complement-fixation test for identification and differentiation of immunological types of the virus of vesicular exanthema of swine.**—*Amer. J. vet. Res.* **14**, 145-149. [Authors' summary modified.] 760

The authors described a complement-fixation test for vesicular exanthema of swine, using hyperimmune sera and vesicular material from naturally infected pigs. Three immunologically distinct types of virus were identified.

Momberg-Jørgensen, H. C. (1953). Hundesygevakciner. En orientering om de praeparater, som kan rekvireres fra Serumlaboratoriet. **[Distemper vaccines obtainable from the Serum Laboratory, Copenhagen.]**—*Medlemsbl. danske Dyrlaegeforen.* **36**, 10-13. 761

The author gave details of price, use and dosage of a number of distemper vaccines and sera, including English, German and Swedish preparations, obtainable from the Copenhagen Serum Laboratory.—F. R. Harris.

Larin, N. M. (1953). **Canine hepatotropic virus in the natural host.**—*Schweiz. Z. allg. Path.* **16**, 614-619. [In English. Author's summary modified.] 762

The virus of canine hepatitis can persist for more than two years in infected kennels, producing from time to time sporadic cases and minor epidemics of the disease amongst young animals which have failed for some reason to acquire inapparent infections and to develop active immunity. The high incidence of inapparent infections suggests that virus carriers are largely responsible for the endemic character of the infection, although the stability of the virus in cold storage and on heating at 56°C. must also be considered.

Liver damage following infection persisted in some dogs for more than a year. L. discussed the significance of this residual damage in the presence of other disease. He considered that the intranuclear inclusions and the complement-fixing antigen both represented signs of only one method of proliferation of the virus in the natural host. Other methods of proliferation with low or undetectable concentration of the complement-fixing antigen and with no characteristic inclusion bodies were also possible.

Hudson, J. R. & Mansi, W. (1953). **Rubarth's disease (canine virus hepatitis). II. The insusceptibility of ferrets to experimental infection.**—*J. comp. Path.* **63**, 335-345. [Authors' conclusions modified.] 763

Attempts to adapt a number of strains of the virus of canine hepatitis to ferrets using various routes of inoculation, various strains of virus and both English and French ferrets, all failed. Virus may have been present in very small quantity in a pair of ferrets 5 days after inoculation with dog material, but none could be recovered from the second passage in ferrets. The authors were unable to confirm the presence of the virus in material that had received 6 to 22 passages in ferrets in France.

Nelson, J. B. (1952). **Acute hepatitis associated with mouse leukemia. I. Pathological features and transmission of the disease. II. Etiology and host range of the causal agent in mice.**—*J. exp. Med.* **96**, 293-302 & 303-312. 764

I. Serial passage of mouse leucaemia was superseded by a syndrome of acute hepatitis. After initiation the hepatitis was readily transmissible by liver material resulting in a mortality of nearly 100%.

II. The aetiological agent was a virus which was demonstrable in Berkefeld V filtrates. The virus was detected in liver, spleen, kidney, heart, blood, urine and intestinal contents and its infectivity was not reduced by aureomycin or terramycin.—E. J. L. Soulsby.

Daubney, R. & Ishak, G. (1953). **Mutations in pathogenicity of some recently isolated strains of fowl-plague virus.**—*J. comp. Path.* **63**, 255-282. [Authors' summary slightly modified.] 765

Two out of four recently isolated field strains of fowl plague virus failed to yield recognizable mutants during serial cultivation in pigeon and chick embryos.

One strain became avirulent for fowls at the 11th pigeon-embryo passage, but capacity to infect fowls was completely or almost completely lost during the next three passages in either chick or pigeon embryos, and was not regained until 27 to 30 additional passages had been

made in chick embryos. The regained capacity of this strain to infect fowls was unaffected by further serial repassage in pigeon embryos.

Other lines of this strain, started from material stored before any mutation had occurred, behaved differently under serial cultivation in pigeon embryos. One line remained lethal to rather more than 50% of inoculated birds, while the virulence of a second line fell to a level at which it caused a mortality of about 10%.

Of two lines, derived from the series in which infectivity for fowls had been lost and reacquired, one showed an exaltation of virulence after further serial passage in pigeon embryos. A substrain " B " of this line, which had been passaged six times in chick embryos simultaneously with Newcastle disease virus, was of remarkably low virulence and high antigenic capacity for fowls from that point onwards. The second line, subjected to 125 serial passages in the pigeon embryo was at that stage lethal to about 5% of inoculated fowls.

A substrain derived from one of the pigeon-embryo passaged strains by serial intracerebral passage in mice showed greatly reduced capacity to infect and immunize fowls. After 7 repassages in the pigeon embryo there was a sudden access of virulence for fowls.

When the first passage in chick embryos of a fourth field strain of virus was stored at −20°C. for 64 days, and then passaged in chick embryos, material from two successive passages immunized birds without causing any illness; but its full virulence was restored after a further 6 passages in chick or pigeon embryos. After a further 19 passages the virulence showed signs of declining. Virus stored in the original brain suspension for 88 days was still fully virulent after a single passage in chick embryos, but showed signs of declining after 6 further passages in chick or pigeon embryos.

Mutual interference was demonstrable in birds inoculated with mixtures of " attenuated " fowl plague and Newcastle disease viruses, but when titres of the two viruses were adjusted so that neither virus had a marked advantage most of the birds developed immunity to both diseases.

YATES, V. J., WASSERMAN, B. & FRY, D. E. (1953). **An intradermal test as a diagnostic aid in Newcastle disease.**—*Amer. J. vet. Res.* **14,** 471-474. [Authors' summary modified.] **766**

The i/d testing technique to detect individual immunity to Newcastle disease was evaluated by using it on 74 birds. Virus isolation studies were carried out on chickens from 35 outbreaks of respiratory disease, and of the 23 instances where Newcastle disease virus was isolated, only 2 showed an inconsistent finding on skin testing. Until respiratory symptoms were evident, most tested birds gave a positive reaction, indicating that they had little or no immunity. No skin reactions were observed on the third day after inoculation in 53 out of 56 birds which were tested on the day respiratory symptoms were first noticed. Birds with respiratory symptoms for at least one day had sufficient immunity to prevent the development of a skin reaction. The test appears to be a convenient and accurate method of determining individual immunity to Newcastle disease, and should be of diagnostic value in respiratory infections of chickens.

UPTON, E., HANSON, R. P., DOW, D. & BRANDLY, C. A. (1953). **Studies on intracerebral inoculation of Newcastle disease virus (NDV) into mice. I. Response of weanling mice to 25 strains of NDV.**—*J. infect. Dis.* **92,** 175-182. [Abst. from authors' summary.] **767**

The authors examined 25 strains of N.D.V., including 2 strain variants, for their ability to cause c.n.s. disturbances in young mice inoculated intracerebrally. Eight of the strains produced fatal infections in a high percentage of inoculated mice. Five produced severe nervous signs in a small proportion of injected mice and milder signs in a large proportion of mice. Eleven caused no apparent signs in a large proportion of mice injected; when signs developed they were usually very mild although paralysis and death occurred occasionally. One strain of virus only rarely affected weanling mice. It was concluded that strain variation is the probable cause of discrepancies between different reports of the neuropathic activity of N.D.V.

Strains that induced severe involvement of the c.n.s. in young mice inoculated intracerebrally were, as a rule, highly lethal for chickens when inoculated intravenously.

The authors discussed the possible nature of mechanism of the neuropathic property of the virus for mice and its correlation with lethality for fowls.

GUALANDI, G. L. (1953). L'influenza della castrazione sulla durata della resistenza conseguente alla vaccinazione contro la pseudopeste nei polli di sesso maschile. **[Effect of castration on the duration of immunity to Newcastle disease in vaccinated cockerels.]**—*Arch. Vet. Ital.* **4,** 233-236. [English, French, German and Spanish summaries.] **768**

Thirty cockerels of average weight 500 g.

were vaccinated with Hertfordshire strain Newcastle disease virus. 18 days later 10 were caponized by surgery and 10 by stilboestrol implantation: the remaining 10 were not caponized. Forty-eight days after vaccination all birds and 5 unvaccinated controls were inoculated s/c with virulent Newcastle disease virus. All non-caponized birds survived. Three birds from each of the caponized groups and all the controls died from Newcastle disease.—R.M.

WHITE, P. G. & APPLETON, G. S. (1953). **The speed of immunity response following vaccination with the B_1 strain of Newcastle disease virus.**—*Amer. J. vet. Res.* **14,** 609-611. [Authors' summary modified.] **769**

Immunity against respiratory exposure to a virulent strain of N.D.V. was demonstrable within 48 hours following ocular vaccination of day-old chicks with the B_1 strain of Newcastle disease virus. Resistance to intramuscular challenge was not found until approx. the eighth day post-vaccination. These findings suggest that a cell block phenomenon results from the vaccination, followed by the formation of specific neutralizing antibodies in the circulatory system.

HOFSTAD, M. S. (1953). **Immunization of chickens against Newcastle disease by formalin-inactivated vaccine.**—*Amer. J. vet. Res.* **14,** 586-589. [Author's summary modified.] **770**

Six groups of 60 chickens each were used to determine the immunizing effect of two doses of inactivated Newcastle disease vaccine given at different intervals. The initial dose was given at 3 weeks of age and the second at intervals of 2, 5, 9, 13 and 17 weeks. One group served as once-vaccinated controls. Each group, along with unvaccinated controls, was challenged with virulent virus four months after the second dose of vaccine. An increased resistance to challenge was demonstrated with the increasing intervals between doses of vaccine. The data indicated that an interval of at least nine weeks, and preferably longer, should be allowed between doses of alumina-gel formalin-inactivated Newcastle disease vaccine, to obtain a substantial degree of immunity.

HOFSTAD, M. S. (1953). **A method of evaluating immunity following vaccination of chickens with inactivated Newcastle disease vaccine.**—*Amer. J. vet. Res.* **14,** 590-593. [Author's summary modified.] **771**

The method used to measure the immunity was to challenge chickens by intranasal inoculation and to determine the presence or absence of virus in the blood, spleen, or lung 72 or 96 hours later, failure to isolate virus from the tissues being considered evidence of immunity. Preliminary experiments in five groups of chickens following the use of formalin-inactivated Newcastle disease vaccine revealed that a single dose of vaccine given to 3-month-old chickens induced a partial immunity. A second dose of vaccine given two weeks after the first did not definitely enhance the immunity. However, two doses given three months apart did confer a substantial degree of immunity which lasted at least eight months after the last dose of vaccine.

I FORTNER, J. (1953). La psittacose. **[Psittacosis.]**—*Bull. Off. int. Epiz.* **40,** May. pp. 146-156. [English summary.] **772**

II. MEYER, K. F. & EDDIE, B. (1953). Psittacose et ornithose. **[Psittacosis and ornithosis.]**—*Ibid.* pp. 157-171. [English summary.] **773**

I. A short review of the present world status of psittacosis, with special emphasis on Germany.

II. A review on the problem of psittacosis with special reference to the possibilities of its transmission by birds other than the Psittacidae.

The authors drew attention to the danger of the importance of the disease being masked by the extensive use of antibiotics.—J.D.

WAGNER, J. & VICTOR, J. (1953). **Psittacotic lesions and respiratory immunity in intradermally vaccinated guinea-pigs.**—*Amer. J. Path.* **29,** 155-173. [Authors' summary and conclusions modified.] **774**

G. pigs injected intradermally with psittacosis virus, cultivated in chick embryo yolk sac, developed resistance to intratracheal infection. Detectable lesions or virus in the lungs were not found at any time after the i/d injection. Inoculation was followed by a systemic disease with slight fever of 3 days' duration.

Virus was detectable, by mouse brain inoculation, in tissues from the site of injection for 6 days, in the regional lymph nodes for 14 days, and in the liver for 6 days. It was recovered from the spleen one day after injection. A specific granulomatous lesion with giant cells, histiocytes, and formation of ceroid pigment appeared at the site of injection, in the regional lymph nodes, and in the liver, when the virus was no longer detectable.

ANDREWES, C. H., CHAPRONIERE, D. M., GOMPELS, A. E. H., PEREIRA, H. G. & RODEN, A. T. (1953). **Propagation of common-cold virus in tissue cultures.**—*Lancet.* **265,** 546-547. **775**

After 10 serial transfers of the common cold

virus in roller tube cultures of embryonic human lung, colds were induced by the culture material in human volunteers indicating the propagation of the virus in the tissue cultures.

—A. Ackroyd.

Scheidegger, S. (1953). **Experimental viral infections in the embryo and fetus. Preliminary notes on pathologic findings with viruses of psittacosis, ectromelia, and rabies.**—*Amer. J. Path.* **29**, 185-197. [Author's summary modified.] 776

In ectromelia and psittacosis, produced experimentally in pregnant mice, it was possible to detect histological evidence of reactions which can be regarded partly as genuine inflammation, and partly as degeneration in the resulting embryos, foetuses, and new-born animals. The chick embryo remained unchanged by the rabies virus. With extremely virulent infections, the mouse embryo usually dies at an early stage of pregnancy and it is possible that the dead embryos are then dissolved. Such reactions are altogether dissimilar to those which take place in the mother animals.

Boshyan, G. M. (1953). **[New experimental data on the nature of viruses and bacteria and their significance in theory and practice.]**—*Veterinariya, Moscow.* **30**, No. 10. pp. 24-35. [In Russian.] 777

As a result of further experiments [see *V.B.* **23**, 2299] B. stated that the nucleoproteins of equine infectious anaemia and other viruses can be separated from the albumin in the serum, and he then described how they aggregate into various bacteria-like forms, depending on the media used, becoming visible under the microscope and ceasing to be filtrable. That these forms were specific B. proved by infecting animals with them, producing the typical diseases followed by the normal immunizing effect, while injections of the cleared sera had no effect. Subsequent cultures of these forms were found to lose their pathogenicity which suggests that it will be possible to prepare live avirulent vaccines from them. With the change in morphology not only do the biological qualities change but the chemical composition also changes. Agglutination and c.f. reactions were stated to have proved the antigenic relationship between the virus of E.I.A. and its bacterial form, and similar results in the case of swine fever.

The E.I.A. allergen "anemin Viev", tested on 20,000 horses, and a vaccine, tested on 50,000 horses, were both prepared from the bacterial forms and proved of value. Other workers were stated to have obtained from the bacterial forms of the respective viruses studied, effective vaccines against swine fever, sheep pox and Newcastle disease, and hyperimune F. & M. disease sera. A series of 8 electron micrographs showed the stages in the aggregation of E.I.A. virus particles into a unit of bacteria. [This explains the nature of the claims previously made (*V.B.* **23**, 876, 938, 1852, 2299 & 3071) on conversion of viruses into bacteria.]

—F.A.A.

Luoto, L. (1953). **A capillary agglutination test for bovine Q fever.**—*J. Immunol.* **71**, 226-231. [Abst. from author's summary.] 778

L. described a capillary agglutination test for Q fever in cattle, using a stained antigen of *Rickettsia burneti*. The results were compared with those obtained with the complement-fixation test on a large number of sera.

Non-specific reactions did not commonly occur. The sensitivity of this test appeared to be greater than that of the c.f. test. It had a high degree of reproducibility for both screening and titration purposes. It was simple, economical and rapid and could be done either in the field or in the laboratory.

IMMUNITY

Thomas, L. & Good, R. A. (1952). **Studies on the generalized Shwartzman reaction. I. General observations concerning the phenomenon.**—*J. exp. Med.* **96**, 605-624. 779

Good, R. A. & Thomas, L. (1952). **Studies on the generalized Shwartzman reaction. II. The production of bilateral cortical necrosis of the kidneys by a single injection of bacterial toxin in rabbits previously treated with thorotrast or trypan blue.**—*Ibid.* 625-641. 780

I. Bilateral cortical necrosis of the kidneys was produced in rabbits by two i/v inoculations of meningococcal toxin under suitable conditions of dosage and timing. The first change was the deposition of an eosinophilic fibrinoid material in the lumen of the glomerular capillaries. The reaction was aggravated by cortisone and A.C.T.H. During neutrophile leucopenia produced by nitrogen mustard it was not possible to produce cortical necrosis with meningococcal toxin and it is suggested that injury to leucocytes by toxin may be the mechanism of production of the fibrinoid material.

II. After i/v injection of thorotrast or

trypanblue a single i/v injection of toxin produced cortical necrosis. Nitrogen mustard, in doses sufficient to produce neutrophile leucopenia, prevented the lesions.—E. G. White.

Erickson, J. O., Armen, D. M. & Libby, R. L. (1953). **The persistence of antigen in the mouse.**—*J. Immunol.* **71,** 30-37. [Authors' summary modified.] **781**

The authors studied the persistence of a single i/v injection of tobacco mosaic virus (TMV) in the mouse by two independent methods.

P^{32} labelled TMV was isolated from liver extracts 9 days after i/v injection by means of specific precipitation with rabbit antiserum to TMV.

Direct observation of liver extracts by the electron microscope revealed the presence of particles strikingly similar in size and shape to TMV up to 15 days after i/v injection.

It is evident that the mouse cannot rapidly dispose of a 2 mg. i/v dose of TMV. These results suggest that the presence of antigen is a prerequisite for antibody formation.

Coombs, R. R. A., Howard, A. N. & Mynors, L. S. (1953). **A serological procedure theoretically capable of detecting incomplete or non-precipitating antibodies to soluble protein antigens.**—*Brit. J. exp. Path.* **34,** 525-534. [Authors' summary modified.] **782**

An account of a serological procedure which theoretically should be capable of detecting incomplete antibodies to soluble protein antigens.

In brief the method involves attaching the protein antigen to the surface of red cells. This is achieved by coupling, by chemical means, the protein to red cell antibodies which on combination with the red cells carry the coupled protein antigen to the red cell surface whilst leaving the cells stable in suspension. Adsorption of antibodies to the coupled protein antigens is then detected by means of an anti-globulin serum.

The authors used the method experimentally to detect antibodies to egg albumen and horse dandruff protein in g. pig, dog and human sera.

Hill, A. G. S., Cruickshank, B. & Crossland, A. (1953). **A study of antigenic components of kidney tissue.**—*Brit. J. exp. Path.* **34,** 27-34. **783**

In rat kidney " stained " with fluroescein-conjugated antisera against kidney tissue, antigens were demonstrated in the basal membranes of the glomeruli and of the tubular epithelial cytoplasm.—E. J. L. Soulsby.

Stevens, K. M. (1953). **The effect of antibiotics upon the immune response.**—*J. Immunol.* **71,** 119-124. [Author's summary modified.] **784**

The rate of loss of labelled antigen (I^{131} bovine gamma globulin) from blood was used as a measure of the primary immune response in rabbits. Standard curves were set up for normal rabbits and for rabbits in which the immune response had been eliminated by prior X-irradiation. The results agreed with those published by other workers.

104 rabbits were given daily injections of one of the following antibiotics: crystalline penicillin G (28,000 units/kg), dihydrostreptomycin (50 mg/kg), aureomycin (30 mg/kg), terramycin (29 mg/kg). The loss of iodinated bovine gamma globulin from the blood of these animals was followed. The mean values for the control compared with the experimental groups were subjected to statistical analysis, using the " F " test. All antibiotics tested produced a depression of immune response.

All rabbits were not affected: some showed no depression, some showed partial depression, while others were completely depressed.

Benkö, A., Szabó, T., Soltész, R. & Reinbold, A. (1953). **Effect of anti-bone-marrow serum in dogs. Influence of changes produced by this serum.**—*Acta med. scand.* **147,** 1-10. [In English. Authors' summary modified.] **785**

The myelotoxic serum produces pathological lesions in the blood picture, in the blood producing organs, liver and spleen. These, however, do not simulate a circumscribed haematological disease. The changes produced by the myelotoxic serum are aggravated by X-ray irradiation, somewhat reduced or at least modified by splenectomy, essentially unchanged by homologous bone marrow, and greatly reduced or even almost inhibited by previous and concurrent treatment with histamine and by administration of tetra-ethyl ammonium bromide.

Fagraeus, A. & Gormsen, H. (1953). **The effect of colchicine on circulating antibodies, antibody producing tissues and blood cells in rat.**—*Acta path. microbiol. scand.* **33,** 421-432. [In English. Authors' summary modified.] **786**

Colchicine was administered to highly immunized rats, their serum titres being later determined individually at short intervals. No significant change in the titres was observed within the first 24 hours, but 48 and 96 hours

after the administration of colchicine a statistically significant decline in titres set in.

Histological examination revealed severe destruction of lymphocytes, and a less pronounced destruction of plasma cells.

These findings indicate that antibodies are not supplied to the serum by means of lysis of the antibody-producing cells.

Traub, F. B., Brasch, A. & Huber, W. (1953). **The effect of high intensity electron bursts on antibodies.**—*J. Immunol.* **70,** 366-371. 787

Antibodies, irradiated with high intensity electron bursts, show a marked dose-temperature dependence for a given dose of electrons, depending on irradiation being carried out in the liquid or frozen state. Typhoid O and H antibodies show interesting differences in radiation sensitivity.—W. R. Bett.

Pillemer, L., Ratnoff, O. D., Blum, L. & Lepow, I. H. (1953). **The inactivation of complement and its components by plasmin.** —*J. exp. Med.* **97,** 573-589. 788

The activation of plasminogen to plasmin by the addition of streptokinase to human serum, but not to monkey, rabbit, dog or g. pig serum, resulted in the inactivation of complement. The components C2 and C4 and varying amounts of C1 were destroyed while C3 was the most resistant. The results suggest that the plasmin system may be involved in complement fixation and in immune haemolysis.

—A. Ackroyd.

Barr, M., Glenny, A. T. & Howie, J. W. (1953). **Active immunisation of ewes and their lambs.**—*J. Path. Bact.* **65,** 155-168. 789

A description of responses obtained in ewes and lambs after injections of diphtheria alum-precipitated toxoid. It was concluded that maternally transmitted passive antitoxin retards active immunization of young lambs.

—G. B. S. Heath.

Hale, W. M. & Stoner, R. D. (1953). **The effect of cobalt-60 gamma radiation on passive immunity.**—*Yale J. Biol. Med.* **25,** 326-333. [Authors' summary slightly modified.] 790

In mice cobalt-60 gamma whole body irradiation effectively destroys the immunity to pneumococcus infection even when abundant specific antibody is present.

Whole body irradiation does not cause an individual, having sufficient specific antitoxin present at the time of irradiation, to become susceptible to tetanus toxin.

The active immunity to influenza Type A virus is not altered by this form of irradiation.

Lipton, M. M. & Freund, J. (1953). **The efficacy of the intracutaneous route of injection and the susceptibility of the Hartley strain of guinea pigs in experimental allergic encephalitis.**—*J. Immunol.* **70,** 326-329. 791

The intracutaneous injection of central nervous tissue or its fractions combined with adjuvants is more rapidly and regularly effective in producing allergic encephalomyelitis in g. pigs of the Hartley strain than is injection *via* the subcutaneous route.—W. R. Bett.

Battisto, J. R., Pringle, R. B. & Nungester, W. J. (1953). **The effect of ultraviolet irradiation on immune serum.**—*J. infect. Dis.* **92,** 85-88. 792

The capacity of rabbit serum to precipitate homologous antiserum, and to fix complement, was lost after irradiation. The passive transfer of skin sensitivity to g. pigs, but not to rabbits, was unaffected.—A. Seaman.

Dujarric de la Rivière, R., Eyquem, A. & Podliachouk, L. (1953). Groupes sanguins des équidés (chevaux, ânes, mulets). [**Blood groups in horses, donkeys and mules.**]—*Rec. Méd. vét.* **129,** 629-644. 793

Antigen A of the mule is identical with that of the horse, and the same applies to antigens C and D. The agglutinogen B found in the r.b.c. of some mules and donkeys is never found in horses. It was shown that blood groupings in donkeys are: Catalan breed OO; Poiterine BB; Pyrenean BO. The authors discussed the blood relationships between these three equine species.—F. R. Harris.

I–V. Goldsmith, W. N., Feldberg, W., Marrack, J. R., Ackroyd, J. F. & Lovell, R. R. H. (1953). **Symposium on the basis of allergic reactions.**—*Proc. R. Soc. Med.* **46,** 253-264. 794

I. Delayed epidermal eczematous sensitization may be produced by both local and systemic mechanisms of antibody production. The state of eczematous hypersensitiveness was shown to be due to circulating or diffusible antibodies; it could be transmitted passively by lymphocytes, but not by serum. The lymphocytes are not disrupted by contact with fresh allergen. Histamine is not instrumental in the production of the eczematous reaction.

II. By the use of the so-called histamine liberator compound 48/80 and pontamine blue, skin histamine release in g. pigs, rats and dogs

was shown to occur first and in the highest concentration in the areas of the face, nipples, perineum and paws, although species differences in the histamine content of the skin exist. Following repeated injections of 48/80, the oedema normally seen in these areas after an i/p injection of antigen, does not occur.

III. Although reagins formed in the serum of allergic subjects may be incomplete antibodies, the feature which distinguishes them from other antibodies is that they become firmly attached where they are injected.

IV. Sedormid (allyl-isopropyl-acetyl-carbamide) combines with platelets to act in allergic subjects as an antigen which undergoes lysis in the presence of antibody and complement. Damage to vascular endothelium may also be caused by the combination of sedormid with endothelial cells to act as an antigen.

V. The type of delayed skin inflammation evoked by manganese butyrate and tuberculin as opposed to the allergic reaction, contains a link which is vulnerable to cortisone and A.C.T.H.—A. Ackroyd.

See also absts. **668** (anthrax vaccine); **669** (P.P.D.); **679-681** (TB.); **695** (requirement of electrolytes for the adsorption of *Bact. coli* antigen by r.b.c.); **704** (rapid plate agglutination test with milk for brucellosis); **705** (ring and plate agglutination tests in sheep and goats); **706** (blocking antibodies in the agglutination test for brucellosis); **707** (Strain 19); **708** (protective effect of sera from animals treated with brucella antigens); **717-718** (allergy); **729** (trypanosomiasis); **739** (incidence of toxoplasma antibodies); **744-745** (F. & M. disease); **748** (rabies); **749-750** (vaccinia and smallpox lymph); **757** (rinderpest); **759** (swine fever); **760** (vesicular exanthema); **761** (distemper); **763** (canine virus hepatitis); **768-771** (Newcastle disease); **774** (psittacosis); **778** (Q fever).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Glasgow, J. P. & Wilson, F. (1953). **A census of the tsetse-fly *Glossina pallidipes* Austen and of its host animals.**—*J. Anim. Ecol.* **22**, 47-56. **795**

A population of 50,000 *G. pallidipes* was found to be maintained by 45 mammals of nine animal species in an area of about two sq. miles. The number of tsetse flies was assessed from the recapture of marked male flies. The census of the mammals was made by recording their tracks on prepared sections of the only path to a water hole. The aquatic and arboreal hosts of the tsetse fly were not counted.

—D. W. Jolly.

Jackson, C. H. N. (1953). **A mixed population of *Glossina morsitans* and *G. swynnertoni*.**—*J. Anim. Ecol.* **22**, 78-82. **796**

J. described a method of estimating the tsetse fly population of a given area using marked flies. The flies were captured, marked on the thorax, and released, from catching and releasing points distributed throughout the test area. The population of the two species, *G. morsitans* and *G. swynnertoni* was estimated from the proportions of marked to unmarked flies collected. J. discussed the statistical significance of these estimations.—D. W. Jolly.

Glasgow, J. P. (1953). **The extermination of animal populations by artificial predation and the estimation of populations.**—*J. Anim. Ecol.* **22**, 32-46. **797**

The artificial predation described is the trapping, and hand collecting of tsetse flies. J. presented evidence in support of the theoretical consideration that the reduction of an animal population by artificial predation, would proceed in a geometrical progression. In practice, however, it was observed that the elements of immigration and the birth rate were sufficient to prevent the artificial predation proceeding to extermination.—D. W. Jolly.

Willett, K. C. (1953). **The laboratory maintenance of *Glossina*. I.**—*Parasitology*. **43**, 110-130. **798**

W. described a method by which a flourishing population of *G. swynnertoni* was maintained under lab. conditions in East Africa for a year. The cages used held ten flies and were kept over water in a thatched hut. The flies were fed daily on g. pigs or sheep, the latter giving the best results. Observations on the life cycle, fertility, and longevity of the laboratory bred flies were included. Attempts to use this method to maintain *G. morsitans* and *G. pallidipes* were less successful. Promising results were obtained with *G. austeni*.—D. W. Jolly.

Hocking, K. S. & Yeo, D. (1953). **Aircraft applications of insecticides in East Africa. I. Preliminary experiments in areas supporting populations of the tsetse fly (*Glossina palpalis* (R.-D.)).**—*Bull. ent. Res.* **44**, 589-600. **799**

Hocking, K. S., Parr, H. C. M., Yeo, D. & Robins, P. A. (1953). **Aircraft applications of insecticides in East Africa. II. An experimental attempt to produce a fly-free corridor through a belt of tsetse-infested woodland.**—*Ibid.* 601-609. [Absts. from authors' summaries.] **800**

I. A preliminary account of experimental applications from aircraft of coarse sprays and coarse aerosols over dense forest areas in East Africa containing *G. palpalis*.

At dosages of 0·2 lb. per acre of the

*p,p'*isomer of D.D.T., or 0·032 lb. per acre of the γ isomer of benzene hexachloride, both the sprays and the aerosols were relatively ineffective, and significant kills were obtained only with the aerosols. The sprays did not penetrate the canopy, and the nominal dosage was in any case too small to produce lethal deposits upon vegetation. Much of the aerosol was filtered out by the upper layers of the canopy. The meteorological conditions in the area were also unsuitable for the application of aerosols, and much of the insecticide did not reach the canopy, but was blown away from the treated area.

It was concluded that aircraft applications of insecticide against *G. palpalis* are wasteful of insecticide, and would be very costly if substantial reductions in fly population were to be obtained. If insecticides are to be of value in such areas, ground methods of applying them would be almost certainly more effective, and less costly.

II. An experimental attempt was made to produce a fly-free corridor through a belt of savannah woodland containing *G. swynnertoni*.

An area two miles wide and four miles long was treated with a coarse spray of a 4·6% wt./vol. soln. of D.D.T. in diesel-distillate. The dosage per application was 0·5 gal. per acre, seven applications being made at intervals of approx. two weeks, so that the treatment covered two pupal periods.

The fly density had fallen to a very low level by the end of the experiment, and the area remained virtually free from flies for two months. An examination of the data suggested however, that the fly population was maintained largely by immigrant flies, the numbers of which fell off for some reason towards the completion of the series of applications. When this is taken into consideration it seems certain that the effect of the applications would have been considerably less upon a stable, self-supporting population.

The drop spectrum of the ground deposit had a mass median diam. of 0·35 mm., and the recovery of insecticide in the area was approx. 60%. Leeward and under sides of obstacles received no insecticide although in some cases dosages were obtained on apparently leeward sides, probably because of local reversals of wind direction.

Twinn, C. R. (1952). **A review of studies of blood-sucking flies in northern Canada.**—*Canad. Ent.* **84**, 22-28. **801**

The major fly pests in the sub-arctic regions are mosquitoes, simuliids and tabanids. Tabanids do not occur beyond the tree-line. *Aedes* are the most troublesome mosquitoes; they have only one generation per year. Some details are given of the life-cycles and habits of simuliids and tabanids.

Satisfactory control is established by appropriate application of D.D.T. in oil.

—Thomas Moore.

Pfadt, R. E., Paules, L. H. & DeFoliart, G. R. (1953). **Effect of the sheep ked on weight gains of feeder lambs.**—*J. econ. Ent.* **46**, 95-99. [Abst. from authors' summary.] **802**

In a study of the influence of control of sheep keds upon weight gains in fattening lambs, over three seasons, no significant difference in gains was observed between treated and untreated control groups. Although the lambs had a moderate to heavy infestation at the start of the trials, the number of keds on the untreated groups soon declined after the lambs had spent a few weeks in the fattening pens, at a time of year when the numbers of keds on range flocks are increasing. The authors discussed possible reasons for this decline. The results indicated that control measures directed against keds on fattening lambs are uneconomic.

—F.E.W.

Leeson, H. S. (1953). **Some notes on the recorded distribution of old world species of *Ornithodoros* (Acarina).**—*Bull. ent. Res.* **44**, 517-526. **803**

L. gave notes on the distribution of 20 species of *Ornithodoros*, of which two, *O. (Otobius) megnini*, and *O. lahorensis*, are of direct veterinary interest. The former is probably of American origin, and occurs in S. Africa, Rhodesia, and India. The latter [which attacks sheep when they are housed during the winter], is distributed throughout the Balkans, the Middle East, Baluchistan, N. India, and the region of the Himalayas.—D. W. Jolly.

Roulston, W. J. & Hitchcock, L. F. (1953). **Depletion of gamma isomer of benzene hexachloride in cattle dipping-fluids.** [Correspondence.]—*Nature, Lond.* **172**, 546-547. **804**

The γ-isomer content of benzene hexachloride cattle dips falls shortly after preparation. From 500 p.p.m. the concentration fell to 150 or 80 p.p.m. after it had been in use for " some time ", and to 0·5 p.p.m. in a sample stored in the laboratory [method not stated] for 4 years.—F. R. Harris.

Weitz, B. & Buxton, P. A. (1953). **The rate of digestion of blood meals of various haematophagous arthropods as determined by the precipitin test.**—*Bull. ent. Res.* **44**, 445-450. **805**

A specific precipitin test of the gut contents of certain arthropods, made at intervals after feeding, to assess the rate of digestion, revealed that a blood meal was digested in a day by the mite, *Bdellonyssus bacoti*, in 1–3 days by mosquitoes, 1–4 days by tsetse flies, in a month by bed bugs, and in 6 months by the tick, *Ornithodoros moubata*.—D. W. Jolly.

See also abstr. **738** (flies as transmitters of toxoplasmosis); **818** (mosquito carriers of *S. digitata*).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Deramee, O., Thienpont, D., Fain, A. & Jadin, J. (1953). Sur un foyer de bilharziose canine à *Schistosoma rodhaini* Brumpt au Ruanda-Urundi. Note préliminaire. [*Schistosoma rodhaini* **in dogs and in the serval in the Belgian Congo.**]—*Ann. Soc. belge Méd. trop.* **33**, 207-209. [In French. Dutch summary.] **806**

S. rodhaini, previously described in several wild carnivores, was identified in dogs and in the serval cat (*Felis serval*). The parasite occurs commonly in dogs in the vicinity of Astrida (Ruanda-Urundi). Infestation may be heavy, with marked pathogenicity.

—S. Brian Kendall.

Lagrange, E .(1953). La lutte biologique contre les planorbes. **[Biological control of Mollusca.]**—*Ann. Soc. belge. Méd. trop.* **33**, 227-235. [In French. Dutch summary.] **807**

From observations made on four African and on two non-African species of fish with a view to their use for the biological control of planorbid snails in Africa, species of *Umbra, Cichlasoma, Tetrodon* and *Pelmatochromis* showed evidence of being effective under laboratory conditions.—S. Brian Kendall.

Allen, R. W. & Jackson, P. K. (1953). **Evaluation of di-phenthane-70 in removing fringed tapeworms** [*Thysanosoma actinioides*] **from sheep.**—*Vet. Med.* **48**, 352-354. **808**

The action of di-phenthane-70 was erratic and at best the drug had little appreciable effect in expelling *Thysanosoma* from sheep.

—Jas. G. O'Sullivan.

Pellegrini, D. (1953). Individuato nella " Taenia jakhalsi " Ortlepp 1938 il cestode adulto del " Cysticercus madoquae " Pellegrini 1950. [*Cysticercus madoquae* **in the dik-dik (an antelope,** *Madoqua* **sp.), the intermediate stage of** *Taenia jakhalsi* **in the jackal** (*Canis aureus*).]—*Atti Soc. ital. Sci. vet., Sanremo*, 1952. **6**, pp. 610-613. [English and French summaries.] **809**

Adult tapeworms, *T. jackhalsi*, were recovered from jackals that had been fed *C. madoquae*, the cystic stage of this worm, from dik-dik antelopes.—I. Martini.

Boko, F. (1952). Fertilitet ehinokoka—faktor enzootičnosti i endemičnosti. [**Fertility of** *Echinococcus*—**enzootic and endemic factor.**] —*Veterinaria, Sarajevo.* **1**, 230-239. [In Croat. English summary.] **810**

In Zagreb 6% of the dogs are infested with *E. granulosus*, and in Sarajevo 16%.

Pigs and goats, as well as sheep, play an important role in the transmission of echinococcus to man in Yugoslavia. The fertility of echinococcus cysts in sheep is 7 times greater, and in goats more than 5 times greater than in cattle. The number of scolices per unit volume is usually much greater in sheep, pigs and goats than in cattle.—I. Martini.

Winterhalter, M. (1952). Suzbijanje ehinokokoze. [**Control of** *Echinococcus* **in Yugoslavia.**] — *Vet. Glasn.* **6**, 535-542. [In Croat.] **811**

W. advocated publicity campaigns to instil into the public the importance of echinococcus as a health hazard and the means whereby it can be controlled.—I. Martini.

Rhode, E. A., Jasper, D. E., Baker, N. F. & Douglas, J. R. (1953). **The occurrence of rhabditis dermatitis in cattle.**—*N. Amer. Vet.* **34**, 634-637. **812**

The authors described a rapidly spreading outbreak of dermatitis in a herd of dairy cattle kept in yards bedded with rice hulls, characterized by red, raw oedematous areas, partially denuded of hair, and exuding a clear or blood-tinged fluid. Larvae of *Rhabditis* sp. were seen in skin scrapings from affected animals and enormous numbers of adults and larvae were recovered from the bedding. The condition responded to a change in environment of the cattle and the application of astringents to affected parts.—R.M.

Ehrenford, F. A. (1953). **Differentiation of the ova of *Ancylostoma caninum* and *Uncinaria stenocephala* in dogs.**—*Amer. J. vet. Res.* **14,** 578-580. [Abst. from author's summary.] **813**

The literature contains discrepancies in the information regarding the sizes of the ova of *A. caninum* and *U. stenocephala* in dogs. The author presented data on the sizes of these ova in several media. A photomicrograph of typical ova shows that *A. caninum* produces ova smaller than those of *U. stenocephala*. The differentiation of the ova of these two species provides a means of clarifying the incidence and distribution of *U. stenocephala*.

Güralp, N. (1952). Anadolu koyunlar'nda görülen Metastrongylidae nevilerine dair sistematik arast'rmalar. **[The lungworms of sheep in Turkey.]**—*Thesis, Ankara.* pp. 53. [Abst. from English summary.] **814**

Examination of the lungs from 28,221 sheep in the Ankara abattoir showed that 86·18% of the sheep were harbouring lungworms. Species noted were *Cystocaulus ocreatus, Dictyocaulus filaria, Protostrongylus rufescens, Muellerius minutissimus* and *P. unciphorus*.—G. B. S. Heath.

Casarosa, L. (1953). Lesioni a carattere generalizzato in giovani bovini (vitelli e vitelloni) inquadrabili nel gruppo delle cosiddette " macchie verdi dei vitelli ". **[Lesions in the liver and kidneys of calves, caused by the larvae of *Neoascaris vitulorum*.]**—*Clin. Vet., Milano.* **76,** 66-81; 97-111 & 129-136. [English and French summaries.] **815**

An account of the lesions caused by the larvae of *N. vitulorum* in the liver and kidneys of 16 calves, with emphasis on their differentiation from TB. lesions in the course of meat inspection.—I. Martini.

Sprent, J. F. A. (1953). **On the migratory behavior of the larvae of various ascaris species in white mice. II. Longevity of encapsulated larvae and their resistance to freezing and putrefaction.**—*J. infect. Dis.* **92,** 114-117. **816**

In mice, 1–6 months after the feeding of infective larvae of *A. columnaris, A. devosi, Toxocara canis* and *Toxascaris transfuga* respectively, most of the larvae of all species were encapsulated in the general musculature, with concentration in the cervical and thoracic regions in the case of the first two species, and in the intestinal wall and mesenteric tissues, and in the brain in the latter two, respectively. Encapsulated larvae of the first three species were resistant to freezing *in situ* at −20°C. for several weeks, those of *T. transfuga* being less resistant. Motile larvae of the latter and of *A. devosi* were recovered from carcasses of mice 6 days after the latter had putrefied at room temperature.—F.E.W.

Manley, F. H. & Barazanji, A. S. (1953). **Canine filariasis in Iraq.**—*Vet. Rec.* **65,** 846-847. **817**

Microscopic examination of samples of peripheral blood from 107 sick or apparently healthy dogs in Baghdad during March to August revealed the presence of microfilariae in 32. The authors treated 15 dogs with stibophen (6 ml. daily, injected i/m for 8 days). Of these, 5 died; they were extremely debilitated before treatment; on P.M. examination no adult worms were found in the heart. Of the remaining 10, one required a further injection, a few microfilariae being still present in the blood.

[The species of *Dirofilaria* involved in Iraq was not stated. This information is of importance in assessing results of treatment. Absence of the nematode from the heart on P.M. examination would not be an indication of successful treatment if *D. repens* was concerned.—Ed. *V.B.*]

Ishii, S., Yajima, A., Sugawa, Y., Ishiwara, T., Ogata, T. & Hashiguchi, Y. (1953). **The experimental reproduction of so-called lumbar paralysis—epizootic cerebrospinal nematodiasis—in goats in Japan.**—*Brit. vet. J.* **109,** 160-167. [Abst. from authors' summary.] **818**

Armigeres obturbans mosquitoes were raised artificially, and fed on an ox carrying the microfilariae of *Setaria digitata* in its blood. Infective larvae were dissected out after maturation in the mosquitoes for about 14 days, and inoculated s/c into 9 experimental goats which were kept in a wire-gauze protected compound with 10 untreated controls. In 7 of the 9 goats signs of neurological impairment ranging from motor weakness to acute paralysis occurred after a latent period of 14–38 days.

P.M. examination of the nervous system revealed the presence of part, or all, of the well-known complex of the lesions of cerebrospinal nematodiasis.

See also absts. **866** (coenurosis and scrapie); **954** (book, human parasitology).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

MONLUX, A. W. & DAVIS, C. L. (1953). **Multiple schwannomas of cattle (nerve sheath tumors; multiple neurilemmomas; neurofibromatosis).**—*Amer. J. vet. Res.* **14,** 499-509. [Authors' summary modified.] **819**

An account of 25 cases of multiple Schwann's cell tumours in cattle and one case in a pig.

The tumour is usually benign. In only one animal were metastases demonstrated. It may be found in animals of all age groups.

The heart, brachial plexus, and intercostal nerves were the commonest anatomical sites. Skin lesions similar to that seen in neurofibromatosis (von Recklinghausen's disease) in man were not encountered.

In most instances, except where lesions involved the heart or mediastinum, the tumour was found adjacent to, or incorporated in, one or more nerves, ganglia, or plexuses.

The findings suggested a multicentric development of many Schwann's cell tumours in cattle.

COTCHIN, E. (1953). **Spontaneous sarcomas of bone in dogs: 30 cases.**—*Brit. vet. J.* **109,** 248-257. [Author's summary modified.] **820**

In a series of 30 primary tumours of bone from dogs, all were sarcomas, with a variable production of a matrix which more or less closely resembled that of bone or cartilage. The favoured sites of tumour formation were the upper part of the humerus (9 cases), the ribs (5 cases), and the lower parts of the femur (5 cases), radius (4 cases, one with bilateral primary tumours) and tibia (3 cases). Metastases were present in 12 cases. Some at least of the sarcomas of the limb bones appeared to have originated centrally, but there was a tendency for them to destroy the compact bone of the shaft locally, and to spread externally. There was often a considerable production of non-neoplastic bone by the neighbouring periosteum.

NIELSEN, S. W. & HOLZWORTH, J. (1953). **Visceral lymphosarcoma of the cat.**—*J. Amer. vet. med. Ass.* **122,** 189-197. **821**

A well-illustrated account of the clinical and pathological features of visceral lymphosarcomas of the cat, based on a study of 14 cases encountered over a period of 5 years. The organs predominantly involved were the small intestine (8 cats), the kidneys (7, in 5 at least bilateral), liver (6), abdominal lymph nodes (6), and omentum and mesentery (4). Other organs involved were the spleen (4), lung (2), pancreas, thymus and stomach (one each). Diagnosis was aided by abdominal palpation, radiography, or exploratory laparotomy. It is suggested that abdominal lymphosarcoma should be borne in mind as a possible cause of wasting, afebrile, chronic disease in mature or aged cats.—E. COTCHIN.

SAMSO, A. & CATANEI, J. (1952). Le cancer de l'intestin chez les animaux domestiques. **[Malignant neoplasms of the intestines in domestic animals.]**—*Bull. algér. Carcinol.* **5,** 403-414. **822**

This review of the literature, the value of which is reduced by the incompleteness of the bibliography, shows that cancer of the intestine of animals is most often recorded in the horse. Sarcomas are more commonly reported than carcinomas, and the small intestine is more often affected than the large. The authors reported a case of lymphosarcoma of the jejunum of a 19-year-old cat.—E. COTCHIN.

FLIR, K. (1952/53). Die primären Nierengeschwülste der Haussäugetiere. **[Primary kidney tumours in domestic animals.]**—*Wiss. Z. Humboldt-Univ., Berl.* **2,** Nos. 1-2. pp. 93-119. **823**

F. gave a very extensive and useful critical review of the relevant literature. He gave details of 5 further cases of kidney tumours: (i) an adenoma of the left kidney of a 10-year-old dog; (ii) an adenocarcinoma of the left kidney of a 5-year-old dog, with metastases in the renal nodes, the right kidney, the liver and the lung; (iii) a sarcoma in the right kidney of a 10- to 12-year-old mare (possibly a case of primary multiplicity of tumours); (iv) a mixed renal tumour in a year-old rabbit; (v) a mixed tumour in a pig.—E. COTCHIN.

I. DURAN-REYNALS, F. & FREIRE, P. M. (1953). **The age of the tumor-bearing hosts as a factor conditioning the transmissibility of the Rous sarcoma by filtrates and cells.**—*Cancer Res.* **13,** 376-382. **824**

II. FREIRE, P. M. & DURAN-REYNALS, F. (1953). **The development of metastases from the Rous sarcoma in relation to some characteristics of its causative virus.**—*Ibid.* 383-385. **825**

III. FREIRE, P. M., BRYAN, E. & DURAN-REYNALS, F. (1953). **Growth and regresion of the Rous sarcoma as a function of the age of the host.**—*Ibid.* 386-388. **826**

I. Experiments with Rous sarcoma ob-

tained from young and adult fowls (Plymouth Rock breed) indicate that there is a factor in aging fowls which is responsible for the apparent disappearance (masking) of the causative virus. Associated with this phenomenon, the transplantability of the tumour by cells and even more by filtrates and the induction of metastases are very much impaired.

II. When filtrates and cells from progressively aging Rous sarcoma were inoculated into test chicks, the incidence of metastases decreased as the age of the original tumour increased.

III. Regression of Rous sarcoma occurred in 15% of 192 adult fowls, but not in 1,464 chicks injected at their 15th day with extracts or cells of Rous sarcoma. Tumour regression was generally followed by resistance to further tumour inoculation, but 2 of 11 immune birds developed malignant epithelial tumours of the ovaries. Those birds which failed to respond to the first tumour inoculation, responded to re-inoculation.—A. Ackroyd.

Woolley, D. W. (1953). **Evidence for the synthesis of vitamin B_{12} by spontaneous tumors.**—*Proc. nat. Acad. Sci., Wash.* **39,** 6-18. [Published in *Stud. Rockefeller Inst. med. Res.* **146.**] **827**

When young mice, born of dams which had spontaneous mammary tumours, were raised from birth on a diet deficient in vitamin B_{12}, they grew almost as fast as controls born of healthy dams which had been fed a diet containing the vitamin, and two-thirds as fast as young mice fed continuously a diet containing superabundant vitamin B_{12}. W. considered that this appeared to indicate that the spontaneous tumour is capable of synthesizing vitamin B_{12}. In similar experiments with young mice from dams with transplanted tumours the growth rate was inferior.

W. discussed these findings and compared them with similar phenomena in the plant kingdom.—F.E.W.

Symmers, W. St. C. & Thomson, A. P. D. (1953). **Multiple carcinomata and focal mast-cell accumulations in the skin of a ferret (*Mustela furo* L.), with a note on other tumours in ferrets.**—*J. Path. Bact.* **65,** 481-493. **828**

A mature female albino ferret had multiple basi - squamo - sebaceous tumours, and also tumour-like collections of mast-cells, in the skin. Fibromatoid growths were present in both ovaries. The authors referred to a papillary tubular cystadenoma of the kidney, a multilocular bile-duct cystadenoma, and a lymphoblastic lymphosarcoma of the mediastinum with leucaemia—each occurring in mature female ferrets. They gave a brief and useful review of the literature relating to mast-cell "tumours" in general, and to tumours in Mustelidae other than the ferret.—E. Cotchin.

Einert, E. (1952). Ermittlungen über die Leukose bei Rindern. **[Leucosis in cattle.]**—*Inaug. Diss., Hanover.* pp. 27. **829**

E. described the occurrence of leucosis in 9 herds of cattle in Lower Saxony in relation to climate, geology, and management of the cattle. He concluded that the disease was caused by an infective and contagious agent with a variable incubation period, and that dietetic deficiencies, by lowering resistance to infection, were only of secondary importance.
—E. A. Hirsch.

See also absts. **764** (mouse leucaemia); **961** (book, cancer research).

NUTRITIONAL AND METABOLIC DISORDERS

Rowlands, S. J., Roy, J. H. B., Sears, H. J. & Thompson, S. Y. (1953). **The effect of prepartum milking on the composition of the prepartum and postpartum secretions of the cow.**—*J. Dairy Res.* **20,** 16-28. **830**

Constituents that are normally high in colostrum are even higher in *pre-partum* cow's milk. The latter more rapidly approached the composition of normal milk in those cows in which the yield readily increased after *pre-partum* milking, than in those which responded poorly. The authors found a relationship between the vitamin A, globulin and fat contents of *pre-partum* milk; they discussed these findings.—John Seamer.

Gordon, W. S. & Taylor, J. H. (1953). **Antibiotics as supplements to the ration of farm livestock.**—*Vet. Rec.* **65,** 838-845. Discussion pp. 845-846. [Abst. from authors' summary.] **831**

The authors studied the effect of supplementing the diet of pigs with antibiotics. In three replicate groups totalling 148 pigs of from 10 weeks old (about 40 lb. weight) which were reared until they reached bacon weight (about 210 lb.), they obtained an increase in growth rate on a supplemented vegetable protein ration ranging from 10 to 15%, and a reduction in food consumption ranging from 5 to 8%. On a supplemented animal protein ration, growth rate

was increased by an average of 12% and food consumption reduced by 9 to 11%.

The increase in growth rate and reduction in conversion ratio were statistically significant, but differences between penicillin and aureomycin were not significant with the number of animals involved.

No significant variation in carcass quality was observed following the feeding of either antibiotic.

Comparison of production costs showed an increase in profit of £1 to £1 16s. (26 to 47%) per pig on supplemented diets, excluding the cost of the antibiotic supplement.

The authors confirmed the occasional lack of response to antibiotics under certain conditions and they emphasized the importance of a better understanding of the mode of action.

KNODT, C. B. (1953). **Antibiotics in the growth of ruminant animals.**—*Antibiot. & Chemother.* **3,** 442-448. [Spanish summary p. 470. Author's summary slightly modified.] 832

On the basis of reports available, aureomycin increases the rate of growth, decreases incidence of scours, and may increase feed efficiency of dairy calves when fed at proper levels. In addition, it does not affect rumen or faecal flora in these animals as far as has been determined.

Preliminary data indicate that potassium penicillin does not increase growth rate and may be deleterious at the levels fed to dairy calves. Procaine penicillin has not affected growth rates at the levels studied.

Results with terramycin have been variable in calves under 8 weeks of age, but in general indicate a growth response at the levels studied. In calves over this age, the effects on growth of the levels studied are questionable, and more research is needed on this antibiotic.

While aureomycin, penicillin, and terramycin have been fed to lambs, the results are confusing and are not conclusive at the present time.

Considerable research is needed to define more clearly the optimal levels and specific effects of antibiotics in ruminant animals.

CHANCE, C. M., DUNCAN, C. W., HUFFMAN, C. F. & LUECKE, R. W. (1953). **Antibiotics in rumen digestion and synthesis. II. The effect of aureomycin on the concentration of some amino acids and B vitamins in the rumen.**—*J. Dairy Sci.* **36,** 495-503. [Authors' summary slightly modified.] 833

Two fistulated steers were used to determine the amount of amino acids and B vitamins present in the rumen at two intervals after feeding when aureomycin was fed at the rate of 0·5 and 1·0 g. per day. The concentration of the ten essential amino acids in the rumen 6 hours after feeding was less when 0·5 g. of aureomycin was included in the ration. The data suggest that the rate of removal from the rumen was accelerated. When 1·0 g. was fed, the rate of passage was slightly higher than that obtained on the aureomycin-free ration, but there was an individual difference when either level was fed. Direct evidence of the synthesis of amino acids was lacking. The increased amounts in the rumen at both collection periods could be accounted for by the amounts ingested. The amount of riboflavin in the rumen was lower when 0·5 g. of aureomycin was fed than when the aureomycin-free ration was fed. Synthesis of nicotinic acid was indicated during the first 12 hours after feeding the aureomycin-free ration, whereas both levels of aureomycin tended to reduce the amount of synthesis.

ATKINSON, R. L., REID, B. L., QUISENBERRY, J. H. & COUCH, J. R. (1953). **Antibiotics, methionine and unidentified growth factors in the nutrition of Broadbreasted Bronze turkey poults.**—*J. Nutr.* **51,** 53-64. [Authors' summary modified.] 834

Bacitracin and penicillin increased growth and improved feed efficiency when added at the rate of 5 mg. per lb. to an all vegetable protein diet for turkey poults. It is indicated that antibiotics do not always induce a growth response under such conditions. DL-methionine produced an increase in growth and an improvement in feed efficiency when 0·05% was added to the basal diet. This response was shown to be additive with that due to an unidentified factor contained in distillers' dried solubles, and was further increased by the addition of an antibiotic to such a ration. Different samples of distillers' dried solubles from the same manufacturer varied in their content of this unidentified growth factor.

WILSON, J. E. (1953). **The effects of penicillin supplements to the diet of turkey poults and chicks.**—*Vet. Rec.* **65,** 633-639. [Author's summary slightly modified.] 835

Under the environmental conditions in which the experiments described were carried out, the addition of penicillin at the rate of 12 g. per ton of feed invariably produced growth stimulation in turkey poults except under the specialized environment produced by extreme isolation when no growth increase was noted. This confirms the experience of workers at Reading and Greenford and in America.

The supplement is effective in reducing

mortality from non-specific causes, among which may be the "infective" agent postulated by other workers. Its use is followed by a greater weight of turkey flesh at killing time. For these reasons the addition of penicillin supplement to starter mashes for young turkeys and its continuance for at least 12 weeks appear to be amply justified.

WAIBEL, P. E., CRAVENS, W. W. & BAUMANN, C. A. (1953). **Effects of dietary antibiotics on the growth of chicks receiving suboptimum amounts of thiamine by mouth or by injection.**—*J. Nutr.* **50,** 441-450. [Authors' summary copied *verbatim.*] **836**

Penicillin, aureomycin, or a mixture of antibiotics markedly increased the growth of chicks fed diets containing limiting amounts of thiamine. The effect was similar whether the dietary carbohydrate was sucrose or dextrin. When the level of thiamine in the diet was adequate, the antibiotics increased growth only slightly.

Dietary antibiotics failed to increase the growth of chicks given suboptimum amounts of thiamine by subcutaneous injection. Variations in weight within groups were much less in the injected birds than in those receiving suboptimum amounts of thiamine in the diet.

The presence of 1% of glycerol tended to stabilize the thiamine in semi-purified diets exposed to the conditions of the chick laboratory. Five per cent of glycerol added to the diet had no adverse effect upon growth or feed efficiency.

EISENSTARK, A. & SANFORD, P. (1953). **The action of antibiotics on intestinal flora of poultry. I. Bacterial counts in chickens fed varying levels of aurofac.**—*Poult. Sci.* **32,** 837-839. **837**

EISENSTARK, A. & DRAGSDORF, R. D. (1953). **The action of antibiotics on intestinal flora of poultry. II. Effect on the growth of intestinal bacteria** *in vitro.*—*Ibid.* 840-845. [Authors' summaries modified.] **838**

I. Counts were made of the intestinal flora of 6 groups of 8-week-old chicks fed different levels of "Aurofac" (aureomycin). Media were used suitable for ordinary aerobic and anaerobic saprophytic bacteria, lactic acid bacteria, enterococci, coliform bacteria, and yeasts. The methods employed failed to reveal any significant change in the intestinal flora of birds following the feeding of aureomycin.

II. The evidence presented showed that antibiotics may have a stimulative effect on the growth of bacteria. Two hundred strains isolated from the intestines of healthy 8-week-old chicks and many stock cultures were examined *in vitro.* Caecal filtrates from antibiotic-fed birds stimulated the growth of bacteria more than caecal filtrates from control birds. Aureomycin, chloramphenicol, dihydrostreptomycin, penicillin, and terramycin all displayed ability to stimulate the bacteria. Microscopic examination of stimulated bacteria revealed numerous enlarged and filamentous cells. The authors discussed the relationship of the changes produced in bacteria by low concentrations of antibiotics to growth of the animals. The stimulation of the bacterial flora may be related to weight gains in poultry which are fed a diet supplemented with antibiotics.

DINUSSON, W. E., KLOSTERMAN, E. W., LASLEY, E. L. & BUCHANAN, M. L. (1953). **Cobalt, alfalfa and meat scraps in drylot rations for growing-fattening pigs.**—*J. Anim. Sci.* **12,** 623-627. [Authors' summary modified.] **839**

Cobalt supplementation significantly increased the rate of gain in growing-fattening pigs.

The addition of 5% meat scraps to a maize-soya bean meal type ration significantly increased the rate of gain; the greatest increase was noted in the pigs which also received cobalt.

Inclusion of excellent quality dehydrated alfalfa as 5% of the ration significantly depressed the rate of gain of growing-fattening pigs.

BEESON, W. M., PERRY, T. W. & REYNOLDS, P. J. (1953). **The effect of surfactants on the growth rate of swine.**—*J. Anim. Sci.* **12,** 619-622. [Authors' summary modified.] **840**

The inclusion of alkyl benzene sulphonate at a level of 0·20% of the ration of weaned piglets resulted in significantly increased growth rate over the basal control group and one which was not significantly different from the response produced by aureomycin hydrochloride (7·5 mg./lb. ration).

At levels of 0·10 or 0·40% of the ration, alkyl benzene sulphonate did not affect the growth rate significantly.

Ethomid C-15 at levels of 0·025, 0·05 or 0·10% failed to exert a growth stimulating effect.

GRIMINGER, P., FISHER, H., MORRISON, W. D., SNYDER, J. M. & SCOTT, H. M. (1953). **Factors influencing blood clotting time in the chick.**—*Science,* **118,** 379-380. **841**

In chicks fed diets supplemented with terramycin, arsonic acid and arsanilic acid the

clotting time of the blood was prolonged. Subsequent administration of vitamin K produced normal values.—D. POYNTER.

HIX, E. L., EVANS, L. E. & UNDERBJERG, G. K. L. (1953). **Extracellular water and dehydration in sheep.**—*J. Anim. Sci.* **12,** 459-473. [Authors' summary modified.] 842

The volume of the extracellular fluids in sheep normally hydrated, as measured by the dilution of thiocyanate (^-SCN), is equal to 30% of the sheared body wt. The extracellular fluid volume is extremely consistent in any given individual.

Sodium chloride and sodium bicarbonate are hydrating, while potassium bicarbonate is dehydrating to lambs. Dehydration due to high dietary potassium intake is produced by a resulting sodium diuresis which may be continuous or transitory. Administration of sodium chloride to lambs deficient in sodium expands the extracellular fluid volume rapidly and provides for the storage of sodium, much of which is exchangeable and may, in metabolic emergencies, contribute to maintenance of the normal extracellular fluid volume.

The authors gave equations for estimation of total exchangeable, and extracellular sodium from determinations of serum sodium and extracellular fluid volume.

Sodium chloride supplementation to lambs at the rate of 20 g. daily hydrates the extracellular fluids to an increase of 3% of body wt. as compared with unsupplemented lambs. The superior gains of salt-supplemented lambs appear to be due to retention of water as a result of hydration.

The sheep has a particular faculty for conserving body sodium. With two lambs, after 339 days of supplemental salt deprivation, the extracellular fluid volume decreased by 13–14% of the normal value.

CHENG, E., STORY, C. D., PAYNE, L. C., YODER, L. & BURROUGHS, W. (1953). **Detection of estrogenic substances in alfalfa and clover hays fed to fattening lambs.**—*J. Anim. Sci.* **12,** 507-514. [Abst. from authors' summary.] 843

Oestrogenic activity was found in clover and alfalfa hays fed to fattening lambs. When assayed against standard doses of stilboestrol by noting the stimulation in uterine weights of immature female mice, the potency of the clover and alfalfa hays varied from 0·8 to 2·7 μg. of stilboestrol activity per lb. of hay tested. One sample each of blue grass, brome grass, ladino clover, immature wheat plants, corn and wheat grains, and soya bean oil meal failed to show the oestrogenic activity. The authors discussed the possible practical effect of these levels of oestrogens in hay upon breeding performance, milk production and rate of gain in fattening animals.

PFANDER, W. H. & PHILLIPSON, A. T. (1953). **The rates of absorption of acetic, propionic and *n*-butyric acids.**—*J. Physiol.* **122,** 102-110. [Authors' summary slightly modified.] 844

The quantities of acetic, propionic and *n*-butyric acids absorbed from physiological concentrations of these acids in the rumen of anaesthetized sheep at pH 5·6–6·5 and in the presence of Krebs's bicarbonate saline solution and carbon dioxide were in the order of acetic >butyric>propionic acids.

The rate of absorption of these acids was influenced by the presence of Krebs's bicarbonate saline and carbon dioxide.

The quantities in which these acids disappeared from the rumen of feeding sheep, as far as could be judged by the constancy of their relative proportions, were in the same order.

The rate of disappearance of acetic, propionic and butyric acids from the rumen of fasting sheep was lower than in feeding sheep.

Butyric acid forms the largest source of energy in the form of fatty acids absorbed from the rumen.

NAHAS, L. & ROSENFELD, G. (1952). Regeneração de hemácies, hemoglobina e proteínas em cavalos após sangrias. Influência do ferro e da soja. **[Effect of iron and soya bean supplements on blood regeneration in serum horses.]**—*Mem. Inst. Butantan.* **24,** 1-7. [English summary.] 845

It is stated that ferrous sulphate and soya bean supplements given after the second bleeding to horses used for the production of tetanus serum, had a favourable effect on blood regeneration. The antibody content was not affected by the supplementary diet.—E.G.

NORDIO, C. B. (1953). Nuove richerche su l'anemia da cipolle. **[Anaemia caused by feeding rats on onions.]**—*Arch. Vet. Ital.* **4,** 201-206. [English, French and German summaries.] 846

Cooked onions were fed to 3 rats at 6 g. per kg. body wt. and to 4 rats at 20 g. per kg., daily for 20 days. The blood picture of each animal was determined every 4 days during this period. Anaemia rapidly developed in all the rats.—R.M.

GREENBERG, S. M. & FRAZER, A. C. (1953). **Some factors affecting the growth and development of rats fed rancid fat.**—*J. Nutr.* **50**, 421-440. [Authors' summary modified.] **847**

Rancid fat in the diet increases the protein requirement of the rat for optimum growth.

A diet containing 10% rancid soya bean oil (peroxide no. 530–550 μ moles/g.) supported almost normal growth in rats when all known essential nutrients were supplied in large amounts and protein constituted 30% of the diet. The difference in growth between a group of rats fed rancid fat with an optimum level of all other known nutrients and a group fed an equivalent fresh fat diet could be accounted for in the main by lowered consumption of the rancid fat diets during the first 2–3 weeks of the experimental period. The only organ weight seriously affected by the presence of the rancid fat was that of the intestinal tract, which showed an increase. Whole desiccated liver, although it had effects on organ weights not attributable to its protein content alone, appeared to benefit the rats in proportion to the protein content when added to the diet. Cortisone had no beneficial effect on the growth of rats fed rancid fat under the experimental conditions employed, nor had several drugs administered to modify intestinal flora.

NELSON, M. M. & EVANS, H. M. (1953). **Relation of dietary protein levels to reproduction in the rat.**—*J. Nutr.* **51**, 71-84. [Authors' summary modified.] **848**

The authors studied the relation of dietary protein levels to reproduction in adult female rats placed, on the day of mating, on purified diets supplemented with all known dietary essentials and containing casein as the source of protein. Under these conditions the 5% protein (6% casein) level was apparently the critical level, as above this level reproduction performance was normal but below it reproduction was severely disturbed. On the protein-free and low protein (2·5%) diets pregnancy was characterized by a high incidence (70 to 100%) and early occurrence of resorptions. The resorptive process was rapid and implantation sites were often not detectable at the end of gestation. Marked decreases in maternal body weight also occurred. With the latter exception, the general picture was similar to that observed for pregnancy in the vitamin B-deficient rat, and in the hypophysectomized rat, and suggests the possibility of hormonal deficiencies in these animals.

The critical need for protein during the earliest stages of placental and foetal development is in contrast with the successful reproduction which resulted when a protein deficiency was instituted only shortly after implantation.

The normality of pair-fed controls when the protein level was raised to 30% eliminated the factors of food restriction and of other dietary deficiencies as causes for these reproductive disturbances.

No young with macroscopic congenital abnormalities were observed in any groups on the protein-free diet.

I. BAXTER, J. H. & VAN WYK, J. J. (1953). **A bone disorder associated with copper deficiency. I. Gross morphological roentgenological, and chemical observations.**—*Johns Hopk. Hosp. Bull.* **93**, 1-23. **849**

II. BAXTER, J. H., VAN WYK, J. J. & FOLLIS, R. H., JR. (1953). **A bone disorder associated with copper deficiency. II. Histological and chemical studies on the bones.**—*Ibid.* 25-39. **850**

III. VAN WYK, J. J., BAXTER, J. H., AKEROYB, J. H. & MOTULSKY, A. G. (1953). **The anemia of copper deficiency in dogs compared with that produced by iron deficiency.** —*Ibid.* 41-49. [Authors' summaries slightly modified.] **851**

I. Young dogs made severely deficient in copper developed a bone disorder, characterized by abnormally thin cortices, deficient trabeculae and wide epiphyses. Fractures and deformities of the bone occurred in many of the animals. Anaemia and greying of the hair accompanied the bone changes. The disorder was relieved by the administration of copper, and never occurred in control animals.

Calcium, inorganic phosphorus and vitamin D levels of the serum of deficient animals were normal, and the bone lesions were not characteristic of rickets. The bone disorder was not a result of inactivity, inanition, or anaemia. The failure of iron deficiency, with severe anaemia, to produce similar bone changes, indicated that the bone disorder of the present study was a specific effect of copper deficiency.

II. Microscopic studies indicated that in the copper-deficient animals there was excessive absorption of bone, particularly about the inner portions of the cortex and also in the shaftward portions of the metaphyses. In addition to increased destruction, decreased deposition of bone matrix may have occurred. These changes did not appear to be related to the bone marrow hyperplasia.

At the cartilage-shaft junctions, there appeared, on one hand, to be over-proliferation of the cartilage cells, while on the metaphyseal side, there was abnormal persistence of the lattice of calcified cartilaginous matrix with a reduction in deposition of bone matrix on this structure.

Chemical studies on cortical bone showed that ash, calcium, phosphorus, and carbon dioxide were normal in controls and copper-deficient dogs. The residual Ca:P ratio and ratio of $Ca_3(PO_4)_3 : CaCO_3$ were almost identical in the two groups.

It was concluded that the bone disorder consisted of a diffuse osteoporosis, with no primary disturbance in the calcification mechanism. The authors discussed briefly possible mechanisms involved in the bone disorder.

III. Dogs made anaemic as a result of iron deficiency were observed to have the classical changes in peripheral blood consisting of relatively normal numbers of r.b.c., with a marked decrease in red cell size, haemoglobin content and haemoglobin concentration. In the bone marrow, iron deficiency resulted in hyperplasia of haemoglobin-deficient normoblasts, with no appreciable shift to the left or evidence of a disorder of maturation. This is in line with the generally accepted conclusion that the haemopoietic abnormality of iron deficiency can be explained solely on the basis of a deficiency of haemoglobin.

In contrast to the anaemia of iron deficiency, the anaemia which occurred as a result of copper deficiency was characterized by a reduction in the number of erythrocytes, with the maintenance of relatively normal red cell indices. In the marrow, there was no evidence of defective development of cells of the erythrocytic series. Irrespective of any role that copper may play in the metabolism of iron and the formation of haemoglobin, the present observations were suggestive that, at least in the dog, copper is essential for the normal maturation of the erythrocytic elements of the marrow and the production of normal numbers of red blood cells.

Wintrobe, M. M., Cartwright, G. E. & Gubler, C. J. (1953). **Studies on the function and metabolism of copper.**—*J. Nutr.* **50,** 395-419. [Authors' summary modified.] **852**

In copper-deficient swine fed ample amounts of iron, the total body content of iron, as measured by chemical assay of the tissues or by measurement of radio-active iron, is low as compared with normal. Copper therapy without the simultaneous administration of iron in such animals is ineffective.

In swine made deficient both in copper and iron, no increase in plasma iron follows iron therapy, but an increase takes place promptly when copper is given as well. These observations are interpreted as indicating that copper favours iron absorption from the gastro-intestinal tract.

That copper is also concerned in the mobilization of iron from the tissues is suggested by several observations. Thus, analysis of the iron content of copper-deficient animals reveals that the chief depletion of total body iron is in the haemoglobin compartment. This suggests that movement of iron from the tissues to the plasma is decreased; this view is also supported by the observation that in copper-deficient swine, the administration of copper is followed by a very sharp rise in the plasma iron content.

That impaired utilization of iron for haemoglobin synthesis is another factor in the disturbed iron metabolism of copper deficiency is indicated by the fact that the intravenous or intraperitoneal administration of iron fails to relieve the anaemia in copper-deficient animals. Furthermore, studies with intravenously administered radio-active iron reveal that the uptake of iron for haemoglobin synthesis is poor in copper-deficient swine.

Cardon, B. P. (1953). **Influence of a high salt intake on cellulose digestion.**—*J. Anim. Sci.* **12,** 536-540. [Author's summary modified.] **853**

Digestion studies with cattle and artificial rumen fermentation experiments clearly showed that increased salt concentration in the rumen following the feeding of high salt rations did not cause a decrease in rumen microbial activity. Both types of experiments show that digestible cellulose as well as digestible gross energy is not altered by the increased consumption of salt.

I. Starks, P. B., Hale, W. H., Garrigus, U. S. & Forbes, R. M. (1953). **The utilization of feed nitrogen by lambs as affected by elemental sulfur.**—*J. Anim. Sci.* **12,** 480-491. **854**

II. Hale, W. H. & Garrigus, U. S. (1953). **Synthesis of cystine in wool from elemental sulfur and sulfate sulfur.**—*Ibid.* 492-496. [Absts. from authors' summaries.] **855**

I. Using the paired feeding technique the authors showed that elemental sulphur can be used by sheep as a partial supply of the dietary needs of sulphur when added to a low-sulphur ration in which the major source of nitrogen is urea. Utilization of feed nitrogen was definitely improved by the addition of elemental sulphur.

Lambs receiving elemental sulphur retained more nitrogen ($P=0{\cdot}015$) and more sulphur ($P<0{\cdot}01$), their wool growth was increased ($P<0{\cdot}10$), and they came closer to maintaining their weight than those on the basal ration ($P=0{\cdot}033$).

Symptoms observed in the sulphur-deficient lambs were: poor appetite, loss of wool, excessive lachrymation, profuse salivation, dulness, weakness, cloudiness of the eyes, emaciation, and death.

Although histological abnormalities occurred in the liver, the heart muscle and the spleen of one lamb and in the liver and the skeletal muscle of another, no definite conclusions could be drawn because these might have been due to some other complicating condition.

II. The authors demonstrated synthesis of cystine in the sheep from elemental and sulphate sulphur, using S^{35} as a tracer.

Although the data obtained were limited, the sulphur^{35} activity of the wool suggested that sulphate sulphur may be better utilized for the synthesis of cystine than is elemental sulphur, possibly in part because of the difference in solubility of the two compounds. The authors discussed the possible significance of the findings in relation to ruminant nutrition.

PARTHASARATHY, D. & PHILLIPSON, A. T. (1953). **The movement of potassium, sodium, chloride and water across the rumen epithelium of sheep.**—*J. Physiol.* **121,** 452-469. [Authors' summary copied *verbatim*.] **856**

The venous-arterial difference between rumen and carotid blood for potassium, sodium and chloride were found to be reliable indications of whether absorption was occurring from the rumen in significant quantities or not. Sodium and potassium were absorbed from the rumen when their concentrations exceeded that in the blood. Passage in the reverse direction occurred when their respective concentrations were lower than those of blood. Chloride was absorbed from the rumen against a concentration gradient provided the concentration was 135 mg/100 ml. or over. At concentrations lower than this, net gains in chloride in the rumen were found.

The presence or absence of potassium did not affect the absorption of acetate or of propionate.

The presence of 0·002 M-mercuric chloride inhibited the absorption of chloride and acetate but did not affect the absorption of potassium and sodium.

Absorption of water from solutions of 0·165 M strength or less occurred. The volume of solutions of 0·33 M increased when they were introduced into the rumen.

The osmotic relations between normal rumen contents and blood are such that absorption of water from the rumen under normal conditions is possible.

SWINGLE, K. F. (1953). **The chemical composition of urinary calculi from range steers.**—*Amer. J. vet. Res.* **14,** 493-498. [Author's summary copied *verbatim*.] **857**

Qualitative analyses of the stones from 63 cases of occluding urinary calculi in range steers revealed the universal occurrence of protein and silica. Frequently associated with these two components were calcium and oxalate and occasionally magnesium. Only rarely were ammonium, carbonate, and phosphate ions found. Aluminium and urate were not detected.

The qualitative analytical methods used for these components are described in detail.

The significance of these observations to the etiology of calculus formation is discussed.

PARSONS, J. (1953). **Zinc phosphate identified as a constituent of urinary calculi.**—*Science.* **118,** 217-218. **858**

A type of urinary calculus not previously identified was found in two human subjects and was shown by spectrographic analysis and comparison with a synthesized compound to contain a substance which was almost certainly $Zn_3(PO_4).4H_2O$. No explanation of the origin of the calculi was given.—R. MARSHALL.

NAKAJIMA, T. & SUGITA, T. (1950). **[On the influence of the feed upon bones. I. Chemical components of the bones of normal developing rats and the influence of the feed supplemented with calcium on the composition and development of the bone. II. On the influence of unpolished rice upon bones.]**—*Jap. J. vet. Sci.* **12,** 21-29; 30-36. [English summary.] **859**

I. In albino rats fed a basal diet of mixed poultry feed from the 30th day after birth the increase in dry matter and the decrease in water content of the bones was parallel to the increase in body development. The calcium content of the bones at 30 days was lower than that calculated from $Ca_{10}CO_3(PO_4)_6$; at 90–110 days it was equal to that of normal bone; and at 140 days it was higher than the normal value. When the basal diet was supplemented with $CaCO_3$ in excess, the deposition of calcium in the bones relatively exceeded that of other constituents.

II. Rats fed unpolished rice for 40 days developed rickets and bone deformity appeared after 70 days. The dry matter content of the bones decreased as the water content increased. The calcium and phosphorus content of the dry matter was lower than in normal rats. When the Ca:P ratio in the diet was adjusted, the composition of the bones tended to become normal, but body growth remained retarded. Both body growth and bone composition approached very near to normal when both the Ca:P ratio and the Ca and P content of the diet were simultaneously adjusted.

—Kogi Saito.

Houle, G. R. (1952). **Vitamin E deficiency in beef cattle.**—*J. Amer. vet. med. Ass.* **121,** 485-487. **860**

Considerable losses of calves within the first 3 months of life, particularly in those born during winter and spring, have occurred amongst beef cattle in Maine, U.S.A. The main diseases responsible for these losses were pneumonia and diarrhoea. H. attributed these conditions to vitamin E deficiency and claimed good results by administering to affected calves 1000 mg. α-tocopherol twice daily by mouth.

—R.M.

Luecke, R. W., Hoefer, J. A. & Thorp, F., Jr. (1953). **The supplementary effects of calcium pantothenate and aureomycin in a low protein ration for weaning pigs.**—*J. Anim. Sci.* **12,** 605-610. [Authors' summary modified.] **861**

Sixty 25 lb. pigs were used to study the effect of aureomycin on the pantothenic acid requirement. A low protein basal ration (15·4%) containing 4·15 mg. of pantothenic acid per lb. was used.

Five out of 10 pigs fed the basal ration developed symptoms of locomotor incoordination. When aureomycin was added (5 mg. per lb.) to the basal ration, an equal number of pigs developed deficiency symptoms indicating no sparing action on the part of this antibiotic for pantothenic acid. However, when calcium pantothenate was added to the basal ration at a level of 2 mg. per lb. no symptoms of deficiency appeared.

The authors discussed possible reasons for apparent variations in the pantothenic acid requirement of pigs.

Turton, J. D. (1953). **Perosis in ducklings complicated by a riboflavin deficiency.**—*Brit. vet. J.* **109,** 171-174. **862**

T. described a condition of young ducklings, associated with leg changes and high mortality at four to five weeks old. The ration they had been fed was found to be deficient in riboflavin and manganese, and probably low in choline. Chicks reared on the same diet had developed "curled-toe paralysis". T. suggested preventive measures.—F.E.W.

Stekol, J. A., Hsu, P. T., Weiss, S. & Smith, P. (1953). **Labile methyl group and its synthesis *de novo* in relation to growth in chicks.** — *J. biol. Chem.* **203,** 763-773. [Authors' summary modified.] **863**

The authors recorded growth rates and the incidence of perosis in pullets, maintained from 3 days old on a diet deficient in choline, methionine, and vitamin B_{12}, or on the same diet supplemented with homocystine, dimethylethanolamine, betaine, and vitamin B_{12}, singly or in combinations, for 5 weeks.

Methionine, betaine, or choline, labelled with C^{14} in the methyl group, was injected into the birds at the end of the 5 week period, and tissue choline and creatine were assayed for radioactivity. The data were correlated with the rates of growth under various dietary conditions.

The transfer of the carbon of the methyl group of methionine to choline and creatine, or of the carbon of the methyl group of betaine to choline and creatine, or of the carbon of the methyl group of choline to creatine in the chick is not dependent on dietary vitamin B_{12}. On a diet deficient in methionine, the addition of homocystine to the ration increased the incorporation of the carbon of the methyl groups of choline and betaine into creatine.

Chicks grew well on a diet supplemented with dimethylethanolamine, homocystine, and vitamin B_{12}, indicating ample synthesis *de novo* of the labile methyl group under these conditions. Good growth was also obtained on a diet free from vitamin B_{12}, which contained dimethylethanolamine, homocystine, and betaine. These results do not by any means indicate that vitamin B_{12} is not required by the chick.

The carbon of the methyl group of choline compared with that of the methyl groups of methionine and betaine was least efficiently incorporated into tissue creatine. The authors discussed these findings in relation to the interpretation of growth data on chicks fed diets containing choline and homocystine.

Aitken, J. N., Boyne, A. W. & Crichton, J. A. (1953). **The effect of feeding iodinated casein and L-thyroxine upon the health, reproduction and yield of a dual-purpose breed of cattle and a purely dairy breed.**—*J. Dairy*

Res. 20, 291-300. [Authors' summary modified.] 864

Iodinated casein or L-thyroxine, under the conditions of this experiment, had no adverse effect on the general health of a dual-purpose breed (Red Poll) or a dairy breed (Ayrshire) of cattle. The treatment did not increase the total milk or butterfat production. The daily milk yield and the milk yield for the duration of the treatment were significantly higher than that of the controls only in the Red Poll cows in their first lactation. The control animals had in four lactations a significantly longer lactation than the treated animals. There was a temporary stimulus due to the treatment, but the resulting increase in yield was not maintained over the whole lactation and had indeed disappeared before the end of the treatment period.

THORPE, B. R. (1953). **Thyroid enlargement in a dog treated with iodine and methyl thiouracil.**—*Aust. vet. J.* 29, 75-78. 865

Thyrotoxicosis was diagnosed clinically in a 9-year-old male dog. The dog responded to the administration of potassium iodide, methyl thiouracil and dry thyroid extract.

—K. G. JOHNSTON.

See also abstr. 827 (synthesis of vitamin B_{12} by tumours); 955 (book, phosphorus metabolism); 956 (book, antibiotics in pig food).

DISEASES, GENERAL

GUILHON, J. & LUCAM, F. (1953). Cénurose et tremblante du mouton. [**Cerebral coenurosis and scrapie in France.**]—*Bull. Acad. vét. Fr.* 26, 327-329. 866

A brief clinical study in which the authors discussed the symptomatology of the two diseases. They showed the geographical distribution of scrapie in France and reported its existence in Loiret.—D. POYNTER.

MAY, J. M. (1953). **The medical program of the American Geographical Society.**—*Schweiz. Z. allg. Path.* 16, 500-503. [In English.] 867

The American Geographical Society is developing a method for practical study of the relationship between disease and geographical environment, analytically in the laboratory under artificial conditions, and synthetically in nature.—W. R. BETT.

STÜNZI, H. (1947). Pathologisch-anatomische Befunde beim plötzlichen Herztod eines jungen Kamels. [**Chronic myocarditis in a young camel.**]—*Schweiz. Z. Path. Bakt.* 10, 219-228. [English and Italian summaries.] 868

A two-month-old camel in a European Zoo died suddenly, and a detailed P.M. examination was carried out. The cause of death was a degenerative disease of the heart of unknown aetiology which has previously been seen in young camels. Histologically, there was extensive polymorphic necrotic scarring of the myocardium; calcareous deposits and myogenous giant cells were a feature.—J. EDWARDS.

KERNKAMP, H. C. H. & FERRIN, E. F. (1953). **Parakeratosis in swine.**—*J. Amer. vet. med. Ass.* 123, 217-220. 869

A description of a dermatosis of pigs from 6 to 16 weeks old which is non-parasitic and non-infective; pruritus does not occur. Affected pigs appear to eat and progress normally. Spontaneous recovery is the rule. It had not been observed in pigs at pasture, and affected pigs turned on to pasture recovered quickly.

—R. A. HUCK.

NIELSEN, I. M. (1952). Bromsulfaleinprøvens anvendelse som leverfunktionsprøve hos hunde. [**Use of the bromsulphalein test for liver function in dogs.**]—*Nord. VetMed.* 4, 1192-1200. [In Danish. English and German summaries.] 870

Bromsulphalein at 5 mg. per kg. body wt. was injected intravenously into 48 dogs. After 30 min. the concentration of the dye was determined in blood serum by means of a Coleman junior spectrophotometer at a wavelength of 5800 Å. In normal dogs the retention of the dye does not exceed 0·3 mg.% in 30 min. Values of 0·4–0·5 mg.% are suspect, and a retention exceeding 0·5 mg.% indicates impairment of the liver cells. The degree of retention depends on the intensity of dysfunction of the liver.—H. WESTERMARCK.

JENNINGS, S. (1953). **Some aspects of veterinary dermatology.**—*Vet. Rec.* 65, 809-816. Discussion; pp 816-819. 871

J. discussed the incidence, classification and aetiology of skin diseases in dogs and cats on the basis of his clinical experience. Various aspects of this subject were mentioned in the course of general discussion on the paper.

—R.M.

See also abstr. 912 (quarantine of animals imported for zoological gardens); 957 (manual of veterinary clinical pathology); 958 (index of diagnosis for the canine and feline surgeon); 962 (book, caesarian section in the bovine).

POISONS AND POISONING

ANON. (1953). **Fluorine poisoning in a Jersey herd.**—*J. Amer. vet. med. Ass.* **123**, 329. 872

A brief note recording the institution of legal action on account of damage to cattle and crops alleged to have been caused by industrial fluorosis.—JOHN SEAMER.

STOKINGER, H. E. (1953). **Toxicologic perspective in planning air pollution studies.**—*Amer. J. publ. Hlth.* **43**, 742-751. 873

A critical evaluation of past studies of acute and chronic air pollution incidents, of current air pollution investigations, and pertinent toxicological information, indicates the improbability as yet of identifying any one particular injurious agent in a generalized "smog" atmosphere. The most important factors influencing the response of individuals to "smog" constituents, from a health study point of view, are the effects of other agents of disease, bacterial and parasitic, as well as factors of personal hygiene and nutrition.—A. ACKROYD.

WHITTEM, J. H., OXLEY, R. J. J. & BLOOD, D. C. (1953). **Bovine hyperkeratosis.**—*Aust. Vet. J.* **29**, 240-243. 874

The circumstances in which this case occurred were particularly interesting in relation to the recent literature on hyperkeratosis in cattle.

The animal had been kept in a field in which there was an assortment of second-hand building materials including timber, "masonite", fibre boards, and in addition a number of drums containing sump oil some of which were leaking, the contents having been spilt on the ground.

This is believed to be the first case reported in Australia.

DEIANA, S. (1953). La protrombinemia nell'intossicazione cumarinica. [**Prothrombinaemia in coumarin poisoning.**]—*Arch. Vet. Ital.* **4**, 139-146. [English, French, German and Spanish summaries.] 875

Coumarin poisoning caused no hypoprothrombinaemia in rabbits, but slight degrees of this seen in calves were unrelated to the size of the dose and were attributed to fatty degeneration of the liver.—G. P. MARSHALL.

PETERS, R. A. (1952). **Lethal synthesis.**—*Proc. R. Soc.* Ser. B. **139**, 143-170. 876

P. showed that the pathological changes in vitamin B_1 deficiency and in arsenical poisoning are initiated by biochemical lesions in the pyruvate oxidase enzyme system which is now known to consist of pyruvate dehydrogenase together with the enzymes of the tricarboxylic acid cycle system; he discussed the biochemistry and physiology of the poison, fluoroacetic acid. This halogen acid is the poisonous constituent of the South African plant *Dichapetalum cymosum* and probably also of the Sierra Leone shrub *D. toxicarium* and produces toxic effects on the heart and nervous system in varying degrees in different animals, the dog being most sensitive, the horse intermediate, and monkeys and human beings less sensitive. In fluoroacetate poisoning, an enzymic block occurs in carbohydrate and fatty acid metabolism at the tricarboxylic stage of the mitochondrial tricarboxylic acid cycle with consequent increase of citrate inside all the tissue cells and slowing or stoppage of metabolism. Fluoroacetate itself is not toxic to enzymes, but enzymic synthesis from fluoroacetate of a fluorotricarboxylic acid, probably fluorocitric acid, occurs which interferes by competitive inhibition with the action of the enzyme aconitase in the stage of conversion of citrate to isocitrate. In addition to the interference with the supply of energy at this metabolic level, the changes in cardiac and nervous activity may be associated with the immobilization of calcium by the increased citrate concentration. [See also *V.B.* **23**, 2913.]

—A. ACKROYD.

PENNY, R. H. C. (1953). **Hemlock poisoning in cattle.**—*Vet. Rec.* **65**, 669-670. 877

An account of poisoning in cows and a bull on one farm in 3 successive years, following dredging of dykes. The animals ate hemlock despite an abundance of grass.—JOHN SEAMER.

VARDIMAN, P. H. (1953). **The bromsulfalein liver function test and biopsy of the liver in the diagnosis of *Senecio* poisoning in cattle.**—*Amer. J. vet. Res.* **14**, 175-178. 878

By the determination of the disappearance of bromsulphalein from the blood it was possible to detect hepatic cirrhosis in five cattle experimentally poisoned by feeding *Senecio*. The test, however, was too delicate for general use, in that impaired liver function can be detected before cirrhosis is evident and consequently before symptoms of poisoning are present.

Liver biopsies, taken anterior to the eleventh rib by hepatic trochar, offered a reliable method for the diagnosis of cirrhosis produced by *Senecio*.—E. J. L. SOULSBY.

GOURLAY, R. J. (1953). **Sun on the skin.** [Correspondence.]—*Brit. med. J.* Sept. 5th, 570. 879

Nicotinic acid as well as mepacrine orally have an appreciable effect in preventing the onset of light dermatitis in photosensitive subjects, while sulphonamides increase sensitivity to light. Painful localized erythema is liable to develop if creosote is splashed on the skin while exposed to sunlight.—A. Ackroyd.

Sedwitz, J., Bateman, J. C. & Klopp, C. T. (1953). **Oxytetracycline** [terramycin] **toxicity studies in dogs.**—*Antibiot. & Chemother.* **3**, 1015-1019. [Abst. from authors' summary.] **880**

Of 7 dogs injected i/v with terramycin in doses ranging from 25 to 220 mg./kg. body wt., one died from respiratory failure in 30 min. following a single large dose. The other 6 which were given smaller daily doses developed progressive azotaemia, anorexia, lethargy, and loss of weight; they died in two to seven days. In these animals, serum concentrations of the drug rose to 16–256 μg. per ml.

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Boyd, E. M. & Boyd, C. E. (1953). **Antihistaminics and apomorphine-induced vomiting.**—*Canad. J. med. Sci.* **31**, 320-325. **881**

An account of experiments which indicated that, in amounts corresponding to the usual human therapeutic doses, none of the antihistaminics tested—three diphenhydramine derivatives and promethazine hydrochloride, methapyrilene hydrochloride, and methapyrilene-8-chlorotheophyllinate—prevented apomorphine-induced emesis in dogs and cats.

—R. Gwatkin.

Melrose, D. G. & Wilson, A. O. (1953). **Intra-arterial transfusion. The potassium hazard.**—*Lancet.* **264**, 1266-1268. [Authors' summary modified.] **882**

Intra-arterial transfusion may be needed to save life. Blood alone should be used. If stored blood is used, precautions should be taken that the plasma-potassium level is not dangerously high. The plasma-potassium level of stored blood increases with length of storage and may exceed 40 mg. per 100 ml.—a concentration which is lethal to man. Simple decanting of plasma and reconstituting with saline solution or with the plasma substitute, dextran, will lower the plasma-potassium to safer levels.

Welch, H. (1953). **About the chemically descriptive generic terms for aureomycin (chlortetracycline) and terramycin (oxytetracycline).**—*Antibiot. & Chemother.* **3**, 659-662. [Spanish summary pp. 756-757.] **883**

Now that the structures of terramycin and aureomycin are known, authors are recommended to make use of the names oxytetracycline and chlortetracycline respectively for these two antibiotics. Both names have been approved by the U.S. Pharmacopeia and the American Medical Association.

—F. R. Harris.

Helander, S. & Böttiger, L. E. (1953). **On the distribution of terramycin in different tissues.**—*Acta med. scand.* **147**, 71-75. [In English. Authors' summary slightly modified.] **884**

The distribution of terramycin in the tissues and organs of white mice was examined by fluorescence microscopy. The antibiotic was found to accumulate in the reticuloendothelial system, and to show high concentrations in the liver and kidney where it is excreted. The lowest concentrations seem to occur in muscular, bone and nervous tissues.

Szybalski, W. & Bryson, V. (1953). **One step resistance development to isoniazid and sodium-*p*-aminosalicylate.**—*J. Bact.* **66**, 468-469. [Authors' summary modified.] **885**

The mutation rate per bacterium per generation of *Bacillus megatherium* to isonicotinylhydrazine resistance is $6(\pm 1{\cdot}5) \times 10^{-5}$. The corresponding rate to sodium-*p*-aminosalicylate resistance is $1(\pm 0{\cdot}3) \times 10^{-6}$. The rate of mutation to double resistance is $8(\pm 1{\cdot}8 \times 10^{-10}$, *i.e.*, seven to eight times higher than the theoretically expected value derived as the product of the individual mutation rates. The authors discussed the significance of these findings.

Harthoorn, A. M. (1953). **The respective values of injections of synthetic *l*-adrenaline and *l*-noradrenaline for some circulatory conditions in veterinary practice.**—*Vet. Rec.* **65**, 482-486. [Author's summary modified.] **886**

H. described the stimulant effect of the injection of *l*-adrenaline and *l*-noradrenaline on the heart and circulation of normal anaesthetized cats and dogs, and discussed the use of these substances in anaesthetic collapse, acute nervous shock and surgical shock.

Hataya, M. (1952). **[Sweating in the horse caused by administration of procaine. I. Administration by blocking. II. Administration by infiltration.]**—*Jap. J. vet. Sci.* **14**, 65-74 & 75-82. [English summaries.] **887**

I. H. observed a sensitized condition of the sweat glands in three horses over an area innervated by cutaneous rami of the radial nerve when the nerve had been blocked by injection of procaine solution; sweating reached its maximum in 20–30 min. and ceased 40–60 min. after injection, but the sensitized condition of the sweat glands persisted for 34 days, sweating occurring in the same area during mental excitation or resistance to restraint, but not after muscular exercise.

II. When procaine was administered by s/c infiltration in the neck, shoulder, breast and flank the area in which sweating occurred corresponded equally well with the anaesthetized area.—Kogi Saito.

Cyriax, J. & Troisier, O. (1953). **Hydrocortone and soft-tissue lesions.**—*Brit. med. J.* Oct. 31st. 966-968. [Abst. from authors' conclusions.] **888**

Hydrocortone acetate exerted a strong anti-inflammatory action when in contact with fibrous tissue. Lesions in human beings of tendon, ligament, and joint-capsule caused by injury or overuse could apparently be cured outright within a week or two. Naturally, the smaller the area of tissue affected the more thoroughly it could be infiltrated with hydrocortone. Precise diagnosis was therefore an essential preliminary.

Lattes, R., Blunt, J. W., Jr., Rose, H. M., Jessar, R. A., Vaillancourt, de G. & Ragan, C. (1953). **Lack of cortisone effect in the early stages of inflammation and repair.**—*Amer. J. Path.* **29**, 1-19. [Authors' conclusions modified.] **889**

The delay in the appearance of elements of the inflammatory and reparative processes in the skin of rats during the administration of cortisone was not apparent histologically in the initial phases of these processes. Delay became evident only after an interval of from 12 hours to 4 days following application of various types of injurious stimuli, mechanical, chemical, and viral. The authors suggested that mucopolysaccharides do not undergo the same chemical changes in cortisone-treated animals as in untreated controls, and that, as a result, the chemical factors favourable for the reparative reaction are deficient.

See also absts. **672-674** (TB.); **687** (action of penicillin on *E. rhusiopathiae in vitro*); **690** (neomycin sulphate in mastitis); **692** (*Bact. coli* infection in calves); **709-710** (cortisone and A.C.T.H. in brucellosis); **713** (experimental leptospirosis in hamsters); **730-732** (trypanosomiasis); **736** (piroplasmosis); **737** (anaplasmosis); **741** (toxoplasmosis); **799-800, 804 & 808** (parasiticides); **831-838** (antibiotic growth factors); **880** (toxicity of terramycin); **921** (occurrence of bacteria resistant to antibiotics and sulphanilamide in bull semen); **956** (book, antibiotics in pig food); **959** (book, pharmacology and therapeutic use of synthetic antihistamines).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Graf, G. C. & Petersen, W. E. (1953). **Changes in respiration and heart rates, body temperatures, plasma lactic acid levels and plasma creatinine levels caused by stress in dairy cattle.**—*J. Dairy Sci.* **36**, 1036-1048. [Authors' summary and conclusions modified.] **890**

The authors determined the effect of low environmental temperature, exercise, dehorning, adrenaline administration, parturition, and intermittent electrical stimuli on the rectal temperature, respiration and heart rates, and lactic acid and creatinine levels in the blood of dairy cattle.

When cattle were placed in a low environmental temperature of from −16 to +16°F. the heart rates increased 12·4% and the respiration rates showed little change. There was a significant increase (0·8°F.) in rectal temperatures and a highly significant increase (36·4%) in the blood lactic acid levels.

When the animals were dehorned, no significant changes were observed in respiration rates, rectal temperatures, or blood lactic acid levels. There was a significant rise in the heart rate, which increased 40·8%.

Vigorous exercise for 10 min. caused highly significant increases in respiration rates (54·2%), heart rates (67·9%) and plasma lactic acid levels (272·7%). A significant rise of rectal temperature also resulted.

The introduction of 1·2 ml. of adrenaline (1:1000) into the blood stream *via* the jugular vein caused a highly significant rise in plasma lactic acid levels and also an increase in heart rate 15 sec. after injection followed by a decrease 60 sec. after injection. A significant decrease was observed also in the respiration rates. Intermittent electrical stimuli produced highly significant increases in respiration rates and plasma lactic acid levels, a significant increase in heart rates, but no appreciable changes in rectal temperatures and plasma creatinine levels.

Parturition produced no significant changes in the factors studied.

WALLACE, C. (1953). **Observations on mammary development in calves and lambs.**—*J. agric. Sci.* **43**, 413-421. [Author's summary modified.] **891**

W. described the normal course of mammary development in sheep from 2 months of foetal age to 4 months after birth; and in dairy cattle from the 3 month foetus to calves 6 months old. Observations were also made on a series of udders from ewes during their first pregnancy. A small group of beef calves and a number of freemartins of various ages were also examined.

Development was found to be closely similar in the two species.

Experimentally it was found that in males of either species castration at birth had little effect on mammary growth while prolonged treatment with oestrogen gave rise to enlarged teats, dilated cisterns and ducts, and to a certain amount of secretion. Little gland tissue was formed in oestrogen-treated males, and there was no increase in the spreading of mammary tissue from the neighbourhood of the teat.

Females of the two species showed a striking difference in their response to experimental treatment. In lambs, removal of the ovaries at birth had no apparent effect on mammary development up to 4 months, while treatment with oestrogen stimulated gland formation in both spayed and intact lambs and also restricted the normal spread of mammary tissue into the udder. In heifers spayed at birth there was almost complete cessation of mammary development, while implants of oestrogen, in addition to inducing gland formation, promoted the spreading of tissue into the udder pad of the spayed animal.

Udder development of freemartins appeared to be similar to that of normal heifers from 5 months foetal age to about a month after birth, but thereafter was more like that of a spayed animal. Removal of the abnormal gonads shortly after birth had no effect, while oestrogen treatment induced development of teats, ducts and glands exactly as in a normal heifer.

Comparing small numbers of calves of the two types it was found that heifers of the beef breed in general showed slightly poorer mammary development than dairy heifers that had been treated in the same way, with more connective tissue and numerous leucocytes in the mammary zone.

WHITTLESTONE, W. G. (1953). **The milk-ejection response of the sow to standard doses of oxytocic hormone.**—*J. Dairy Res.* **20**, 13-15. **892**

In a group of six sows, the response to 0·5 units of oxytocin, injected into an ear vein repeatedly, showed little or no variation throughout the period of lactation; the circulation time (average 15·0 sec.) was more uniform than the milk let-down time.—G. P. MARSHALL.

OHASHI, T. (1952). **[Statistical observations on white blood cell picture in normal racehorses.]**—*J. Jap. vet. med. Ass.* **5**, 186. **893**

The average differential w.b.c. count for 1,112 healthy Thoroughbred and Arab racehorses, examined in spring and autumn, was:—basophiles 0·6%; eosinophiles 3·9%; neutrophiles 50·4%; lymphocytes 43·7%; monocytes 1·4%.—KOGI SAITO.

LUKE, D. (1953). **The differential leucocyte count in the normal pig.**—*J. comp. Path.* **63**, 346-354. [Author's summary modified.] **894**

L. gave total white blood and differential cell counts for different age groups of pigs. Normally the number of lymphocytes is consistently fewer than that of the polymorphonuclears. There were wide variations in the total w.b.c. counts from week to week. In the new-born pig there is a comparative lymphopenia.

SACCHI, R. & PERETTI, S. (1953). Dello svolgimento dei reticolociti nel feto di Bos taurus. 1 Nota. **[Formation of reticulocytes in the bovine foetus.]**—*Nuova Vet.* **29**, 163-166. **895**

Reticulocytes are always present in the bovine foetus, their number being in inverse proportion to its age. Owing to their absence in adult cattle these cells should be considered as elements of foetal haemopoiesis.—I. MARTINI.

GARNER, R. J. & SINGLETON, A. G. (1953). **Laminar flow in the portal vein of the sheep and goat.**—*J. comp. Path.* **63**, 300-303. [Authors' summary modified.] **896**

By following the fate of radio-active chromic phosphate injected into the spleen, the authors demonstrated that laminar flow can occur in the portal vein of the sheep and goat. In these species splenic blood may be diverted to either the right or left lobes of the liver. The authors discussed possible reasons for this phenomenon.

ERENÇIN, Z. (1951). Die Cytologie der Hämal-Lymphknoten von Wiederkäuern (Schaf und Ziege). **[Cytology of haemo-lymph nodes in the sheep and goats.]**—*Acta anat.* **11**, 401-413. **897**

Haemo-lymph nodes, mesenteric lymph nodes, spleens and bone marrow from slaughtered sheep and goats were examined by the

peroxydase reaction and in stained smears and sections. Lymphoblasts, lymphocytes, myeloblasts, myelocytes, monocytes, haemocytoblasts, r.b.c., and, more rarely, megakaryocytes were identified in the haemo-lymph nodes.

Anaemia was induced in one of twin sheep by repeated bleeding. Both were slaughtered and the haemo-lymph nodes were compared. Those of the anaemic twin were enlarged and showed evidence of increased myelopoiesis.

E. concluded that extra-medullary myelopoiesis is a normal function of haemo-lymph nodes.—R.M.

Sloan, A. W. & Wishart, M. (1953). **Cardiac extra sounds in the dog.**—*J. Physiol.* **122,** 135-143. [Authors' summary slightly modified.] **898**

The authors studied the incidence of cardiac extra sounds in logarithmic and in stethoscopic phonocardiograms from the chest wall and from the ventricular wall in 12 healthy dogs.

The amplitude of the third sound vibrations was reduced when the venous inflow to the heart was diminished or stopped by occluding one or both of the venae cavae; this procedure produced no constant change in the vibrations corresponding to the fourth heart sound.

An increase in the venous inflow to the heart caused no significant change in the amplitude of the vibrations of either the third or fourth heart sounds.

Neither electrical stimulation of the vagus nor intravenous administration of digoxin or physostigmine salicylate produced cardiac extra sounds in cases where these were not originally present, or altered significantly the amplitude of vibrations which were previously present.

Burn, J. H. (1953). **Acetylcholine and the heart beat.**—*Lancet.* **264,** 1161-1164. [Author's summary slightly modified.] **899**

In work on rabbits B. found that the rhythmic contractions of the heart are due to the local production of acetylcholine. This is synthesised by choline acetylase, and when the concentration rises to a threshold value the wave of contraction is initiated. The acetylcholine is then destroyed by cholinesterase. There appears to be an optimal concentration of acetylcholine for the maintenance of the beat, and amounts in excess in this optimum depress the rate and force of the contraction. This is the effect seen when the vagus nerve is stimulated.

Bortolami, R. & Lombardo, S. (1953). Dello svolgimento e della fine struttura della capsula lienis in feto do Bos taurus. [**Development and structure of the spleen capsule in the bovine foetus.**]—*Nuova Vet.* **29,** 37-40; 61-66. **900**

In the bovine foetus, numerous smooth muscle fibres develop between the second and seventh month in the spleen capsule and trabeculae, eventually constituting four fifths of their structure. Two layers—longitudinal and cylindrical—are formed throughout this period. From the 7th to the 8th month a third group becomes conspicuous, giving the histological structure in certain portions the appearance of a three-directional network.—I. Martini.

Santoro, R. R. & Sommersguter, G. F. (1951). Acción de los ultrasonidos sobre el bazo. [**Action of ultrasonic waves on the spleen.**] —*Medicina, B. Aires.* **11,** 290-293. [English summary.] **901**

Histological examination of the spleen in 4 rabbits that had been exposed in the splenic region for 15 min. on 20 alternate days to ultrasonic waves, 800 kc/sec. at the very high field intensity of 40 W/cm², revealed a decrease in the number and size of the Malpighian corpuscles (white pulp) resulting from the destruction of lymphoblasts and young lymphocytes, these cells being very sensitive to ultrasonic waves. The blood count revealed a marked leucopenia. The number and the osmotic resistance of the r.b.c. were unchanged.—F.E.W.

Patay, R. & du Chalard, A. (1952). A propos de l'épiphysectomie chez Gallus domesticus L. [**Excision of the pineal gland in fowls.**]—*C.R. Acad. Sci., Paris.* **235,** 498-500. **902**

The pineal gland was excised in 37 fowls of both sexes from 20 to 85 days old. The development of the gonads and secondary sex characters, and the increase in body weight, were more rapid in these than in normal birds.—R.M.

Pearse, A. G. E. (1953). **Cytological and cytochemical investigations on the foetal and adult hypophysis in various physiological and pathological states.**—*J. Path. Bact.* **65,** 355-370. **903**

Using the trichrome-periodic acid-Schiff method of staining, P. demonstrated the presence of cells containing muco-protein in foetal glands as early as 8 weeks. The number and size of such cells gradually increased up to puberty and marked granulation and enlargement are a characteristic of pregnancy.

—E. J. L. Soulsby.

See also abstr. **793** (blood groups in equines); **830** (effect of prepartum milking on composition and secretion of milk); **841** (factors influencing blood clotting); **842** (extracellular water and dehydration in sheep); **856** (movement of potassium, sodium chloride and water through the rumen epithelium of sheep); **960** (transactions of the fourth conference on the adrenal cortex).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

I. Ritchie, J. N. (1953). Réglementation du commerce international des viandes. **[Control of the international trade in meat and meat products.]**—*Bull. Off. int. Epiz.* **40,** May. pp. 319-329. 904

II. Nielsen, F. W. (1953). Réglementation du commerce international des viandes. **[Control of international trade in meat and meat products.]**—*Ibid.* pp. 309-318. 905

III. Vittoz, R. & Yasin, S. A. (1953). Réglementation du commerce international des viandes en Asie méridionale et en Extréme-Orient. **[Control of international trade in meat in Asia.]**—*Ibid.* pp. 351-384. [English summary.] 906

I. Countries such as Gt. Britain, that are dependent on imports for the majority of their meat, must obviously control these imports rigidly; but it is not solely the concern of Gt. Britain, for if this control were not exercised, foreign vessels and cargoes intended for export might spread infection round the world. There has not been much need for control by regulation during recent years, since all foreign purchases have been made by the Ministry of Food, which simply stops buying in countries from which import would be dangerous. No imports are made from certain countries where dangerous diseases are known to exist and where satisfactory control of export cannot be assured, but from others, such as South America, controlled import occurs, under precautions that ensure that no carcasses of animals that are known to have contagious disease are included. Even then, this imported meat, or its bones and scraps, must not be fed to animals without boiling. The diseases most feared are F. & M. disease, Newcastle disease, swine fever, rinderpest, Teschen disease, and vesicular exanthema. The last three do not occur normally in Gt. Britain.

II. In Denmark, all abattoirs are under the control of the Ministry of Agriculture and are supervised by veterinarians who inspect the animals before and after slaughter. Lay assistants deal with management and administrative matters but have no control over either animals, meat or by-products. Meat is stamped as " passed unconditionally ", or " passed under conditions " or " totally condemned ". Totally condemned meat is soaked in creosote and thereafter sent to " rendering down " plants. " Conditionally passed " meat receives appropriate treatment at the abattoir and is sold locally. Only meat or by-products " passed unconditionally " may be exported. In spite of these strict precautions, and the excellent health of Danish livestock generally, many countries require additional safeguards against Danish imports, though their own meat is not nearly so carefully regulated. N. expressed the hope that the Office International des Epizooties will be able to remove this anomaly.

III. The authors classified the various Asiatic countries as Exporters or Importers of live animals and of meat and meat products, and gave a summary of various regulations of those countries, together with a table showing their livestock populations. As traffic is by road, rail, water and air, it would be expected that widespread dissemination of all diseases would occur, especially as only Japan and the U.S.S.R. have a special veterinary staff controlling it, but in practice, rinderpest, F. & M. disease, anthrax, haemorrhagic septicaemia, and brucellosis seem to be the major problems and a few other diseases occur as minor troubles. The authors recommended that all veterinary staff should be authorized to communicate direct with the Office International des Epizooties and that O.I.E. should draw up model regulations.

—R. Macgregor.

Receveur. (1953). Bases de réglementation du commerce international des viandes originaires d'Afrique. **[Meat and meat products from Africa in international trade.]**—*Bull. Off. int. Epiz.* **40,** May. pp. 330-350. [English summary.] 907

In Africa, the livestock areas are far from the consumption areas, and these livestock areas are afflicted with diseases peculiar to the country, *e.g.* trypanosomiasis and bovine contagious pleuro-pneumonia. As long as the carcass meat was consumed only in one or two not too distant towns, these diseases could be considered local, and local law was sufficient to limit them to certain areas and sometimes to eradicate them. These problems have now become world-wide, since cold storage and other methods of preserving meat tend also to preserve viruses and various other pathogens indefinitely, and the aeroplane, and vastly improved road and rail transport are potential means of spread of indefinite extent. It has therefore become urgent for some international body to co-ordinate both the laws regulating animal movement and research into animal diseases.—R. Macgregor.

Ricci, R. (1953). Riassunto sulla diagnosi di specie dei visceri. Tecnica del loro esame ispettivo. Apparato respiratorio. **[Identification of the viscera of slaughter animals.]**—*Croce Azzurra.* **4,** 93-109. 908

A description of the anatomical differential characters of the lungs, spleen, liver and kidneys of cattle, horses, pigs and sheep.
—I. MARTINI.

MCCALL, A. M. (1953). **An explosive outbreak of food-poisoning caused by *Salmonella dublin*.**—*Lancet.* **264,** 1302-1304. [Author's summary modified.] 909

The author described an explosive outbreak of food-poisoning due to *S. dublin* in which 610 known cases occurred. The cause was raw milk from a tuberculin tested herd. *S. dublin* was isolated from the milk, the udder, and the faeces of an affected cow. It was also recovered from all samples of faeces from patients showing signs of illness. When pasteurized milk was supplied the epidemic finished in a few days.

GORSLINE, H. E., HAYES, K. M., MOSER, R. E., JR., HOWE, M. A., JR. & DREWNIAK, E. E. (1951). **Pasteurization of liquid whole egg under commercial conditions to eliminate *Salmonella*.**—*Circ. U.S. Dep. Agric.* No. 897. pp. 15. [Abst. from authors' summary.] 910

The authors found that pasteurization can be successfully used, under processing-plant conditions, to produce liquid, frozen, and dried whole egg free from *Salmonella,* and that milk-pasteurizing equipment can be used, with little or no modification, for the pasteurization of liquid whole egg.

With careful attention to operating procedures, the liquid whole egg can be flash-heated to 140°F. and held at that temperature for 3 min. to kill any *Salmonella* present without appreciably affecting the functional qualities of the egg product. Liquid egg so treated was found to be free from *Salmonella,* although many samples of the raw product had contained the organisms before pasteurization.

DIESEL, A. M. (1953). **A review of the activities of the veterinary profession in South Africa.**—*J. S. Afr. vet. med. Ass.* **24,** 135-140. 911

A brief account of the development of the various branches of the veterinary profession in South Africa from the days of Theiler, starting in 1893, and of the present relationships between the State Veterinary Service, veterinary education, and private practice.—R.M.

PELLEGRINI, D. (1953). La prévention quarantenaire contre les contagions dans l'importation des animaux exotiques. **[Quarantine of animals imported for zoological gardens.]**—*Bull. Off. int. Epiz.* **40,** May. pp. 404-411. [English summary slightly modified.] 912

In order to prevent the spread of tropical contagious diseases and of rinderpest in particular, a quarantine station designed to receive exotic animals for zoological gardens is being established by Italy near Naples and will be made available to other European Governments.

HAMLYN, L. H. & THILESEN, P. (1953). **Models in medical teaching with a note on the use of a new plastic.**—*Lancet.* **265,** 472-475. 913

The authors gave an outline of the various types of freehand, or directly or indirectly cast, static or working, models of small anatomical, histological and embryological structures and clinical manipulations which may be used as visual aids in medical teaching. Plasticine, gelatin, vinamould, rubber latex and wax have, up till now, been used, but the cold setting plastic "Fibrenyle" and other plastics are coming into general use.—A. ACKROYD.

See also abst. **699** (meat inspection).

LIVESTOCK HYGIENE

ANON. (1952). **Suggestions for improving services and facilities at public terminal stockyards.**—*Agric. Handb. U.S. Dep. Agric. Livestock Branch.* No. 36. pp. 73. Washington: Superintendent of Documents, U.S. Govt. Printing Off. 40 cents. [Mimeographed.] 914

This booklet would be of great interest to anyone called upon to design yards for handling large numbers of livestock; or to criticize such a design. It is however, intended for the architect or builder rather than for the veterinarian.
—R. MACGREGOR.

INGLIS, J. S. S. & ROBERTSON, A. (1953). **The measurement of heat loss through floors.**—*Vet. Rec.* **65,** 875-876. [Authors' summary copied *verbatim.*] 915

An instrument was devised to measure heat loss through floors such as would take place from the surface of a recumbent pig, and utilised to measure the heat losses through a number of different types of flooring, with and without litter. Insulating air spaces in concrete were found to have relatively small effects, wood and dry litter cut down the heat loss to a considerable extent while brick was also of benefit as compared with concrete. Wetness of the floor or the litter increased the heat losses considerably in every case.

REPRODUCTION AND REPRODUCTIVE DISORDERS

BONADONNA, T. (1953). Competenza del veterinario nel settore della fecondazione artificiale. **[The veterinary surgeon in artificial insemination organizations.]** pp. 21. Torino: Tipografia Emilio Bono. **916**

B. considered that all the technical work connected with artificial insemination should be carried out by trained veterinary surgeons. —I. MARTINI.

HYNES, N. R. (1953). **Artificial insemination** [in Ireland].—*Irish Vet. J.* **7**, 186-195. Discussion pp. 195-200. **917**

Owing to the preponderance of small herds and the widespread use of the communal bull, A.I. is well suited to Ireland. Of necessity unproven bulls are used, their conception rate for 1952 being 66·3%. All cows inseminated and female progeny resulting from A.I. are earmarked. That two thirds of all insemination should be with Shorthorn semen is the objective.—W. S. MARSHALL.

KAMHI, S. (1952). Praktična metoda za fiksiranje ovaca kod umjetnog osjemenjivanja na terenu. **[Practical field method for the restraint of sheep during artificial insemination.]**—*Veterinaria, Sarajevo.* **1**, 791-796. [English summary.] **918**

The hindquarters of the ewe are supported on a horizontal wooden frame, approx. 2 feet 8 in. above the ground. This method gives a satisfactory restraint and only one assistant is required.—I. MARTINI.

POLGE, C., ROWSON, L. E. A., STOWER, J., HOLT, A. F., BRUCE, W., SWANNEY, J. M. & MOSS, J. A. (1953). **The storage of bull semen at low temperatures. [Symposium. Society for Study of Animal Breeding, 6th Feb., 1953.]**—*Vet. Rec.* **65**, 557-564. **919**

Since Emmens and Blackshaw reported the successful freezing and restitution of bull semen in 1950 [*V.B.* **21**, 872], there have been far-reaching advances in the techniques for the preservation of bull semen by freezing to low temperatures. The experience of seven different groups of workers was outlined, from which the following method appears to give good results.

Semen is collected at a temperature around 28°C., a diluent of equal quantities of egg yolk and sodium citrate is added and the temperature of the mixture is reduced to 5°C. Whilst at 5°C. additional diluent consisting of one part glycerol and four parts sodium citrate is added to give a final concentration of 10% glycerol by volume: it is left overnight at 5°C .and next day cooled at 1°C. per min. to −15°C. and then at 3°C. per min. to −79°C. When thawed at 40°C. a 50% survival may be expected.

Semen held at −79°C. for 10 months gave a 75% conception rate in 16 cows. When diluted 1:40, semen gave a conception rate of 63·6% in 11 cows and semen diluted 1:100 is reported to give good results.—IAN NEWSAM.

ROWSON, L. E. A. & POLGE, C. (1953). **Storage of bull semen at −79°C. and fertility results for up to 12 months.**—*Vet. Rec.* **65**, 677-679. [Abst. from authors' summary.] **920**

Bull semen diluted 1:4 in the presence of 10% glycerol was found to have maintained normal fertilizing capacity after storage for a year at −79°C. Seven out of 12 cows became pregnant following insemination with semen diluted 1:100 and kept frozen at −79°C. for 2 to 24 days.

The motility of bull semen frozen at −192°C. in liquid air was similar on thawing to that of semen frozen at −79°C. in solid CO_2. The authors described a number of "deep-freeze" storage units.

ALFORD, J. A. (1953). **The occurrence of bacteria resistant to penicillin, streptomycin, and sulfanilamide in diluted bull semen.**—*J. Dairy Sci.* **36**, 1097-1103. [Author's summary modified.] **921**

Bacterial plate counts of over 10,000 per ml. were obtained from samples of diluted bull semen containing sulphanilamide, penicillin, and streptomycin, when penicillinase and *p*-aminobenzoic acid were included in the plating medium to inactivate the penicillin and sulphanilamide. Comparison of "per cent non-returns" obtained, using semen with low and with relatively high counts, indicated that these bacteria were not related to fertility. Although sulphanilamide had little or no effect on the bacterial content of semen containing penicillin and streptomycin, the inclusion of both of the antibiotics is desirable, since bacteria are usually present that are resistant to one but not to the other. The resistant bacteria are primarily diphtheroids and are inhibited but not killed by low concentrations of penicillin; however, they are not inhibited by relatively high concentrations of streptomycin.

BERG, J. W. (1953). **Differential staining of spermatozoa in sections of testis.**—*Amer. J. clin. Path.* **23**, 513-515. [Author's summary modified.] **922**

The nuclei of spermatozoa were found to

be acid-fast in contrast to other testicular elements when stained by a modified Ziehl-Neelsen technique described by Putt (1951). Spermatozoa of man, rat, mouse and hamster are well demonstrated by this technique; spermatozoa of rabbit and g. pig, less well. The method is applicable both to autopsy material and smears of semen. The staining reaction parallels that of mycobacteria, but the mechanism is undetermined. B. discussed possible uses of the stain.

McDonald, L. E., McNutt, S. H. & Nichols, R. E. (1953). **On the essentiality of the bovine corpus luteum of pregnancy.**—*Amer. J. vet. Res.* **14,** 539-541. 923

Surgical removal of the corpus luteum between the 92nd and 236th days resulted in the termination of pregnancy in 10 cows. In 3 others from which the corpus luteum was removed on the 207th, 224th and 230th day respectively, pregnancy was maintained for 50, 24 and 18 days. It appears that the corpus luteum is necessary to maintain pregnancy until approx. the 200th day of pregnancy, and that an individual variation exists.—F.E.W.

Stormorken, H. & Teige, J. (1953). Hypoprothrombinemi som årsak til forblødning ved utklemming av corpus luteum hos ku. **[Hypoprothrombinaemia as a cause of fatal haemorrhage following expression of the corpus luteum in cows.]**—*Nord. VetMed.* **5,** 149-159. [In Norwegian. English and German summaries.] 924

Haemorrhage following expression of the corpus luteum in cows is not important, as the blood is absorbed and conditions soon return to normal. A fatal outcome is likely only in pathological conditions such as hypoprothrombinaemia; in such cases blood transfusion should be given.—F. R. Harris.

Santamarina, E. & Venzke, W. G. (1953). **Physiological changes in the mammalian pineal gland correlated with the reproductive system.**—*Amer. J. vet. Res.* **14,** 555-562. [Abst. from authors' summary.] 925

The authors studied 153 pineal glands from sheep, 110 from cattle and 755 from rats in an attempt to correlate physiological changes in the gland with the reproductive system. They gave the mean pineal gland weights for various age groups of non-pregnant and pregnant ewes, rams, and castrated male sheep; calves, non-pregnant cows, bulls, and steers; and adult and immature white rats.

In non-pregnant ewes, the largest pineal glands were found in those individuals exhibiting well-developed ovarian follicles. The mean pineal gland weight in pregnant ewes is greater than in non-pregnant ewes. The mean pineal gland weight in castrated male sheep is less than in the ram.

The pineal gland appeared to be larger in the dairy cow than in the beef cow. Castration causes the pineal gland of the steer to weigh less than the gland in the bull of similar age.

The pineal gland in the male is heavier than in the female.

The authors discussed these findings.

Runner, M. N. (1951). **Differentiation of intrinsic and maternal factors governing intrauterine survival of mammalian young.**—*J. exp. Zool.* **116,** 1-20. 926

Thirty-six mice received transplants of genetically tagged eggs into the right ovarian capsule; 143 controls were untreated. All pregnant mice were examined at the 18th day of pregnancy for the numbers, types and distribution of the offspring in the uterus. In mice with transplanted ova there was a direct relationship between the numbers of young in opposite horns. This proportion was inverse in control animals.

Hybrid embryos, whether native or transplanted, survived as frequently as did native or transplanted inbred embryos. One genetically tagged embryo migrated from the horn in which it was transplanted to the opposite horn. —R.M.

Olsen, M. W. & Marsden, S. J. (1953). **Embryonic development in turkey eggs laid 60-224 days following removal of males.**—*Proc. Soc. exp. Biol. N.Y.* **82,** 638-641. [Authors' summary copied *verbatim*.] 927

A delayed and retarded type of embryonic development occurred in 16·7% of the Beltsville Small White turkey eggs laid 54–224 days after the females were separated from males. This development in most instances could not be detected macroscopically earlier than the 4th day of incubation. The embryonic membranes usually discontinued their growth after covering an area of the yolk equal to that occupied by a normal 2- to 3-day turkey embryo. In most instances no embryo could be detected macroscopically although serial cross sections showed a definite organization on the part of centrally located cells. Two living embryos were found in eggs laid 78 and 98 days respectively after the hens were separated from the males. These embryos, after 8 days of incubation, had attained a size equivalent to a normal 4-day turkey embryo. The embryonic hearts were still beating and there was a well developed vascular system in both cases. A 7-day embryo, with a

well developed vascular system was also found in an egg which had been incubated 11 days. This egg was laid 195 days after the female had been separated from the males.

PUNTRIANO, G. O. (1953). **Qualitative investigation of estrogens and testosterone of bull semen.**—*Amer. J. vet. Res.* **14,** 542-547. 928

Two different samples of semen from healthy bulls were investigated for the presence of oestrogens and testosterone. The bio-assays of oestrogens using two different methods gave negative results. The bio-assays of testosterone using the method of Moore and Gallagher (1930) gave positive results.

It may be concluded that while the absence of oestrogens is probably a normal occurrence in bull semen, the presence of testosterone may play some role in the physiology of reproduction.

DUTT, R. H. (1953). **Induction of estrus and ovulation in anestrual ewes by use of progesterone and pregnant mare serum.**—*J. Anim. Sci.* **12,** 515-523. [Author's summary modified.] 929

D. studied the incidence of oestrus, ovulation and fertilization in groups of anoestrous ewes injected with pregnant mare's serum (PMS) alone, progesterone alone and progesterone for various periods followed by PMS in late May and June.

None of the control ewes came into oestrus nor had any ovulation during the experimental period. In anoestrous ewes injected with 500 I.U. of PMS alone, ovulation occurred, unaccompanied by oestrus. When progesterone was injected in approx. physiological amounts for a period of 15 days before PMS, synchronous oestrus and ovulation occurred in all ewes. Treatment with progesterone alone for a period of 15 days resulted in synchronous oestrus and ovulation in 4 out of 9 ewes.

Ova produced in anoestrous ewes by injection of PMS following progesterone treatment are fertilizable.

Oestrus induced by this treatment was of approx. normal duration, *i.e.*, the average was 33·6 hours.

DUNBAR, R. S., JR. & HENDERSON, C. R. (1953). **Heritability of fertility in dairy cattle.**—*J. Dairy Sci.* **36,** 1063-1071. [Abst. from authors' summary and conclusions.] 930

On the basis of this work and the work of others which the authors reviewed briefly, it seems certain that selection for fertility measured by non-returns to first service, services required per conception, or calving interval cannot be very effective and that consideration given to fertility in selecting breeding stock will but serve to decrease the effectiveness of selection for such traits as butterfat production and type conformation. A further implication of these results is that any marked improvement obtained in the reproductive efficiency of the dairy cattle population must be brought about by improvement of nutritional, pathological and/or other environmental factors which exert an influence on the process of reproduction.

HUTT, F. B. & SAUNDERS, L. Z. (1953). **Viable genetic hypotrichosis in Guernsey cattle.**—*J. Hered.* **44,** 97-103. [Authors' summary modified.] 931

An extreme deficiency of hair was transmitted as a simple, autosomal, recessive character to two Guernsey calves in the same herd. The most severely affected calf when 8 weeks old lacked hair except on the end of the tail, the inner surface of the ears, the eyelids, lips, dewlap and umbilicus. When 36 months old, the other calf had hair in these areas, also on the extremities of the legs, between the toes, and in lesser amounts elsewhere. Sections through hairless skin showed that the hair follicles lacked papillae, and that their cells were not differentiated as in normal follicles. The tubular (sweat) glands were cystic. This mutation differed from three similar kinds of genetic hypotrichosis known in cattle, namely lethal hairless, semi-hairless, and hypotrichosis with anodontia. The authors described briefly the distinguishing features of all four conditions.

FISCHER, H. (1953). De aangeboren langharigheid, een erfelijkheid gebrek bij runderen. [**Overgrowth of the hair, an inherited defect in cattle.**]—*Vlaam. Diergeneesk. Tijdschr.* **22,** 262-266. [In Dutch. English, French and German summaries.] 932

F. discussed the inheritance and the apparent increased incidence of congenital overgrowth of the coat in cattle, which is a cause of dyspnoea and lowered milk production in affected animals in the summer. He mentioned differentiation from overgrowth of the coat which occurs as a sequel to F. & M. disease.—R.M.

ELDRIDGE, F. E., SMITH, W. H. & MCLEOD, W. M. (1951). **Syndactylism in Holstein-Friesian cattle. Its inheritance, description and occurrence.**—*J. Hered.* **42,** 241-250. [Authors' summary modified.] 933

Seventeen cases of syndactylism were found in Holstein-Friesian cattle, one of which was dissected and described in detail. The mode of inheritance of the character was found to

follow the pattern of a single autosomal recessive. Observations indicated that the disadvantages of the character far outweighed its possible advantages.

WILTBANK, J. N., TYLER, W. J. & CASIDA, L. E. (1953). **A study of atretic large follicles in six sire-groups of Holstein-Friesian cows.**—*J. Dairy Sci.* **36**, 1077-1082. [Authors' summary slightly modified.] 934

The incidence of atretic large follicles was found to be affected significantly by heredity, reproductive period, stage of *post-partum*, interval, month, and individuality; it was not found to be affected significantly by inherent producing ability, time from parturition to involution of the uterus, or early loss of pregnancy.

Most cows having atretic large follicles recovered without treatment. Breeding efficiency was appreciably lowered in affected cows, but the magnitude of the response was dependent upon heredity.

CRONEBERG, K. (1952). Die Melanose der Nebennierenkapsel beim Rind. [**Melanosis of the adrenal capsule in cattle.**]—*Inaug. Diss., Hanover*. pp. 23. 935

Melanosis of the adrenal capsule was observed in 6·5% of slaughtered cattle in the Hanover district. Melanophores were found in the capsule and in the connective tissue of the cortex, zona glomerulosa and zona fasciculata, but not in the parenchyma. The condition was unrelated to sex, breed, age, and to colour of coat and skin. C. suggested that it may be congenital.—H. BEHRENS.

SPLITTER, E. J. (1953). **Observations on an erythrocytic inclusion in swine.**—*Amer. J. vet. Res.* **14**, 575-577. [Author's summary modified.] 936

Four pigs in a single herd were found to be harbouring iron-reacting inclusions in cells of the erythrocytic series of the blood. The inclusions were associated with an acute haemolytic anaemia attributed to *Eperythrozoon* infection in two of the animals and apparently unassociated with any pathological condition in the other two. S. discussed the similarity of these structures to those observed in human patients affected with congenital familial anaemia and acquired haemolytic anaemias of unidentified aetiology.

LUKES, J. (1953). **Three-day sickness of baby pigs.**—*J. Amer. vet. med. Ass.* **123**, 214-216. 937

L. suggested that " baby pig disease " in the U.S.A. is probably the same as a condition which occurs in piglets in Czechoslovakia, which is due to constriction of the ureters and is hereditary.—R. A. HUCK.

BRETSCHER, A. (1950). Experimentelle Unterdrückung der Polydactylie beim Hühnchen. [**Suppression of polydactylism in the chick embryo.**]—*Rev. suisse Zool.* **57**, 576-583. 938

One hundred and forty fertile eggs of Dorking fowls, the feet of which normally have five digits, were incubated for 4 days. Colchicine solution was then applied through a window cut in the shell and membranes to one limb bud of each embryo for 30 min. The shells were sealed and the eggs were incubated for a further 10 days. Out of 63 embryos which survived this treatment suppression of the number of digits and the number of bones composing them was found in 22 of the treated limbs. Disappearance of the supernumerary digit was noted only in 2 embryos.

B. suggested that the polydactylism is caused by an anomaly of the epidermal fold of the limb bud. The extent to which the defect develops depends on the mass of the limb blastoma.—R.M.

MORLEY, F. H. W. (1953). **Selection for economic characters in Australian Merino sheep. III. Inheritance of skin-fold score in Merino sheep and problems of scale.**—*Aust. J. agric. Res.* **4**, 204-212. 939

The adequacy of arithmetic and logarithmic scales for measuring skin-fold scores was examined using published data from crosses of the Border Leicester and Merino breed and from back crosses and filial generations, as well as original data from Merino selection experiments where selection had been for and against skin fold and for and against weaning weight. The criteria used were the Powers tests for additive gene action and the constancy of variances. The log scale apparently removed much of the epistatic interactions in the breed cross data though potence was still shown on this scale. Using data from the selection group, means and variances were correlated on the arithmetic scale. On the transformed data this correlation was absent and the variances became relatively constant. It was concluded that the genes controlling skin folds act geometrically and that the genes for freedom from folds, are, on the average, dominant over their alleles.

If there are negative genetic correlations between skin folds and other important characters one may well be satisfied with moderate freedom from folds as this will be achieved by only

small changes in gene frequency relative to those required to produce marked freedom from folds. As predicted, heritability estimates were higher on the log scale, being 0·55 as against 0·45 on the arithmetic scale. It is pointed out that the use of the log scale does not alter the order of ranking of individual records and so of the effectiveness of selection. These will be changed however, if more than one record is used, or the records of relatives are also considered.—A. A. Dunlop.

Scott, I. W. & Wilson, G. B. (1952). **Effect of month of calving on production.**—*Agric. Gaz., N.S.W.* **63,** 293-296 & 357-360. **940**

Group herd recording figures indicate that 22% of cows milk less than six months of the year, that the average lactation of recorded cows is seven months and that on the average each dairy herd is replaced every five years. A preliminary study covering only two years of production figures correlated with "rainfall picture" and pasture growth studies has suggested that with adequate feeding, the month of calving has little effect on production. However under average pastoral conditions, where fodder crops are provided, and with judicious supplementary feeding, calving one or two months before the opening seasonal rains occur may prove to be the most economical period for susbequent production. Generally calving in the November-December period in New South Wales leads to shorter lactations. Farmers are advised to study the pasture and rainfall incidences of their own district before embarking on a breeding programme.—P. K. Briggs.

See also absts. 662 (hereditary resistance and susceptibility to mastitis); 962 (book, caesarian section in the bovine).

ZOOTECHNY

McDowell, R. E., Lee, D. H. K., Fohrman, M. H. & Anderson, R. S. (1953). **Respiratory activity as an index of heat tolerance in Jersey and Sindhi × Jersey (F_1) crossbred cows.**—*J. Anim. Sci.* **12,** 573-581. [Authors' summary modified.] **941**

Twenty pure-bred Jersey cows and 20 Red Sindhi × Jersey (F_1) cows were examined (a) at a "normal" temperature of 57°–84°F., and (b) after 3 hours' exposure to 105°F. with a vapour pressure of 34 mm. Hg. Observations were made on rectal temperature, respiratory rate, and respiratory volume, the method of measuring the latter being described.

The crosses showed a smaller rise in rectal temperature ($1·87 \pm 0·152$°F.) than did the Jerseys ($3·06 \pm 0·236$°F.). Both the final respiratory volume and the rise in respiratory volume, however, were also slightly smaller in the crosses. Furthermore, the correlation between respiratory volume and rectal temperature in the cows exposed to comparable heat stress was a positive one, often of high magnitude.

It is concluded that the superior heat tolerance of the crosses cannot be attributed to a more sensitive respiratory response, but that the higher respiratory activities are compensatory responses on the part of the individuals with the lower heat tolerance. The crosses, however, did show a more marked reduction of tidal volume ($-0·48 \pm 0·131$ l./resp.) than the Jerseys ($-0·29 \pm 0·113$ l./resp.), which should further reduce the risk of an induced alkalosis.

Respiratory rate proved to be a less sensitive index of heat tolerance than respiratory volume. Under these conditions there was no significant correlation between rectal temperature and respiratory rate.

Ragsdale, A. C., Thompson, H. J., Worstell, D. M. & Brody, S. (1953). **Environmental physiology and shelter engineering, with special reference to domestic animals. XXI. The effect of humidity on milk production and composition, feed and water consumption, and body weight in cattle.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 521. pp. 23. [Authors' summary modified.] **942**

Data on milk production and composition, and body weight in Holstein, Brown Swiss, Jersey and "Brahman" cows at low and high relative humidities at various temperatures showed that below 75°F. atmospheric temperature, the effect of relative humidity on the above processes was not significant. The effect of humidity increased with increasing temperature above about 75°F.

Pino, N. & Biondo, G. (1953). Ricerche e considerazioni sulla castrazione ormonale dei mammiferi. (Prove sperimentale in "Ovis aries".) [**Hormonal castration in sheep.**]—*Zootec. e Vet.* **8,** 34-44 & 66-74. **943**

It was possible to obtain a transient castration in sexually mature rams by s/c implantation of 150–300 mg. synthetic oestrogens. Regressive changes were observed in the testicles, the pituitary gland and the thyroid. The carcass meat was comparable in quality to that of surgically castrated rams.—I. Martini.

Doutressoulle, G. (1952). L'élevage au Soudan Français. **[The livestock of the French Sudan.]** pp. 374. Algiers: E. Imbert. [Price not given.] 944

The livestock of the French Sudan is, in the north, in the hands of nomadic tribes who are entirely dependent on their herds; in the south, it is in the hands of agriculturists. Cattle, goats, sheep, horses, donkeys and camels are kept by both. The author gave a detailed description of each tribe, their grazing grounds and the management of the herds; together with accounts of past improvements and future policies. Excellent photographs and some delightful sketches accompany the text and there is a good supply of maps, tables and diagrams.

—R. Macgregor.

Bien, C. & Gould, M. (1952). **Tropical beef cattle industry in the western hemisphere.**—*Bibliogr. Bull. U.S. Dep. Agric. Libr.* No. 19. pp. 157. Washington: Superintendent of Documents. U.S. Govt. Printing Off. 40 cents. 945

A bibliography of publications between 1940-50 and a few of 1951, from those tropical American countries and the southern part of the U.S.A. where tropical cattle are bred.

—R. Macgregor.

Jeffreys, M. D. W. (1953). **Bos brachyceros or dwarf cattle.**—*Vet. Rec.* **65,** 393-396; 410-415. [Author's summary copied *verbatim.*] 946

Sufficient evidence has now been marshalled to show that wherever the brachyceros is found it breeds true to type; that it is characterised by its wide range of coloration; that it is not a nomadic species; that its owners are not nomadic pastoralists but settled agriculturists; that it is not a " stunt " or degenerate from a larger type; that it was the first of the bovines to be domesticated; that it spread widely with neolithic man and that it always precedes the larger type of bovines which arrive with nomad pastoralists.

Young, G. A. & Underdahl, N. R. (1953). **Isolation units for growing baby pigs without colostrum.**—*Amer. J. vet. Res.* **14,** 571-574. [Authors' summary modified.] 947

The authors described and illustrated isolation units which were used to raise pigs from birth to 4 weeks of age. Because a disease-free environment was provided, colostrum was not essential. They discussed the value of these units for the study of (1) disease, (2) nutritional requirements for piglets, (3) genetic capacity for growth and (4) disease control.

TECHNIQUE AND APPARATUS

Teitell, L. & Berk, S. (1952). **Prevention of mold growth in optical instruments. Panama Canal zone exposure.**—*Industr. Engng Chem.* (*Industr.*) **44,** 1088-1096. 948

Growth of fungus which occurs in optical lenses used in tropical areas was prevented by inserting inside the casing perforated metal capsules containing about 0·5 g. *m*-cresyl acetate (Cresatin).—R.M.

Wright, L. J. (1953). **The histological preparation of human and animal tissues by freeze-drying.**—*J. med. Lab. Tech.* **11,** 73-86. [Abst. from author's summary.] 949

W. described a simplified, inexpensive freeze-drying apparatus and discussed the use of the method for histological work. He also discussed the application of staining techniques to sections submitted to freeze-drying.

Tullis, J. L. (1953). **Preservation of platelets.**—*Amer. J. med. Sci.* **226,** 191-202. [Author's summary modified.] 950

T. described and discussed methods for the preservation of blood platelets. Platelets appear to be relatively inert metabolically and can be preserved for periods of time far in excess of the other cellular elements of blood.

Malčić, B. (1952). Intravenozna pielocistografija kod svinje. **[Excretory urography in swine.]**—*Veterinaria, Sarajevo.* **1,** 777-787. [In Croat. English summary.] 951

A contrast medium (35% solution of diethanolamine 3,5 di - iodo 4 pyridone N octene acid) is injected intravenously into the anaesthetized pig. The ureter and renal pelvis are made visible by compressing the hypogastrium firmly for 20–30 min. with a rubber ball. When the pressure is removed it is possible to take X-ray plates of the distal part of the ureters, and of the bladder 10 to 40 min. later.

—I. Martini.

Parker, C. S., Breakell, C. C. & Christopherson, F. (1953). **The radio-electrophysiologogram. Radio transmission of electrophysiological data from the ambulant and active patient.**—*Lancet.* **264,** 1285-1288. 952

The authors described and illustrated a portable radio transmitter which is " worn " by the subject to be tested and can be adapted for

the recording of either the electrocardiogram or the electroencephalogram in ambulant patients, even during vigorous physical activity. They suggested further applications, such as work with radio-active tracers, the study of muscle-action potentials and of the electrical activity of mucosa, or phonocardiography. They suggested that the apparatus might be adapted for use in studies on animals where freedom of movement is desirable.—F.E.W.

See also absts. **766** (intradermal test for the diagnosis of Newcastle disease); **870** and **879** (bromsulphalein test for liver function and diagnosis of *Senecio* poisoning).

BOOK REVIEWS

ANON. (1953). **British Veterinary Codex 1953.** pp. xxiii+737. London: The Pharmaceutical Press. 45s. **953**

The publication of the *British Veterinary Codex* is a milestone in veterinary literature. British veterinarians have had to lean unduly upon medical literature on matters covered by this Codex and now have a first-class authority of their own to which they can refer. This book should be useful to veterinarians in all countries: certainly, any equivalent volume from another country, written in one of the better-known languages, if available, would have been used extensively by a very wide range of English-speaking readers all over the world.

Representatives of the Royal College of Veterinary Surgeons and of the British Veterinary Association collaborated in the production. A committee, supported by six special subcommittees, dealt with the matter as it was being prepared. Thus, with the expert editorial staff of the Pharmaceutical Society, the work was carried out very thoroughly and with expert advice.

The *British Pharmacopoeia* is an official publication issued under the authority of the Medical Act 1862 and the Medical Act 1950, and its contents provide legal standards. The *British Pharmaceutical Codex* produced by the Pharmaceutical Society of Great Britain has been in existence since 1907 with frequent revision, the last being in 1949. It was first produced essentially as a book of information, but the necessity of having standards for drugs and preparations not in the *British Pharmacopoeia* influenced its development so that it became to an increasing extent a book of standards as well as a book of information. It has attained such a reputation for reliability that its contents are often accepted as standard definitions in British law courts.

The *British Veterinary Codex* is a younger member of the family and has all the advantages of the organization behind it. The book is divided into three parts, I. Monographs on Drugs, Chemicals and related substances (pp. 1-424); II. Antisera, Vaccines and related products (pp. 425-500); and III. Formulary (pp. 501-618). In addition there are 16 Appendixes (pp. 619-674) and a Therapeutic and Pharmacological Index—an index to treatment—(pp. 675-696).

Standard and legal enactments in the *British Veterinary Codex* relating to drugs are those of the *British Pharmacopoeia* or, if not available there, those of the *British Pharmaceutical Codex,* or if not available there either, are specially devised ones, the latter being distinguished by prefixing the word " veterinary " to their titles. Above 70 substances are included that are either of particular veterinary significance or have not yet found their way into the *British Pharmacopoeia* or the *British Pharmaceutical Codex.*

The largest section of the book is Part I, comprising 431 Monographs. These cover all the more important drugs and chemicals used in veterinary work. In each there is a definition of the substance, a summary of its nature and properties, information on its actions and uses, toxicity and dosage, for the domesticated animals. Details are given concerning storage of subtsances and their sterilization when appropriate.

Part II contains a mass of detailed information. All the important sera, vaccines and bacterial diagnostic agents are dealt with.

Part III, Formulary, is also very important and contains a mass of authentic information.

The Appendixes consist of: I. Reagents employed in assays and tests; II. Quantitative test for arsenic; III. Quantitative test for lead; IV. Limit tests for (A) chlorides, sulphates, and iron; (B) mercury in dihydroxyanthraquinone; V. Determination of (A) acetyl value of cetomacrogol; (B) nitrogen; (C) reducing sugars; VI. Biological assay of (A) antirachitic vitamin (vitamin D_3); (B) penicillin and dihydrostreptomycin in intramammary injection of procaine benzylpenicillin and dihydrostreptomycin; (C) lamb dysentery antiserum; (D) pulpy kidney antiserum; (E) tuberculins; VII. Tests for freedom from abnormal toxicity; VIII. Tests

for purity of living bacterial vaccines; IX. Tests for sterility; X. Sterilization; XI. Isotonic solutions; XII. Powders and sieves; XIII. Names, symbols and atomic weights of elements; XIV. Thermometric equivalents; XV. Weights and measures; XVI. Other names for substances of the British Veterinary Codex.

The book is well produced and well bound. The subject matter is arranged for easy and quick reference and the subject index is comprehensive.

WATSON, M. [Hon. Consultant, Ross Institute of Tropical Hygiene, London.] (1953). **African highway. The battle for health in Central Africa.** pp. xxix + 294. London: John Murray. 63s. 954

The author began work on malaria in Malaya in 1901, and has advised on its control in many countries. He became Assistant to Ross when the Ross Institute was founded in 1928 and Director of the Institute when Ross died. In 1929 he was appointed adviser to the Rhodesian copper mining companies. With the help of a number of colleagues the author records in this book something of the magnificent efforts that have been made to control malaria and other diseases in the Copper Belt in Africa. Figures taken from one table suffice to show how great was the achievement: in 1929-30 the death rates from disease among European and African employees in the Copper Belt were 22·4 and 32·3 per thousand respectively, nearly half being caused by malaria and blackwater fever. In 1948 the corresponding figures were 4·84 and 3·45 per thousand respectively.

The story is unfolded with the help of text, figures, charts, maps and photographs. There is much here for all who are interested in drainage, housing, hospital work, vital statistics, and a host of other aspects of life in the Copper Belt. There are many lessons, too, which can be applied to other tropical areas: it was indeed the author's experience in Malaya which afforded the basis for his work in Africa during the last 20 years.

There is one short reference to nagana. When the mines were opened transport cattle and imported dogs died of trypanosomiasis. Within a few years both species survived at the mines because of forest clearing, increased human populations and particularly the hunting of wild game.—E. G. WHITE.

BLACKLOCK, D. B., SOUTHWELL, T. & DAVEY, T. H. [Revised by.] (1953). **A guide to human parasitology for medical practitioners.** pp. viii + 228. London: H. K. Lewis & Co. Ltd. 5th Edit. 25s. 955

This is a general textbook on protozoan and helminth parasites for medical practitioners. The veterinary reader will find the chapters on technique useful since the methods given can be performed with the minimum of laboratory equipment. The remainder of the book will be of comparative interest.

—D. POYNTER.

MCELROY, W. D. & GLASS, B. [Edited by.] (1952). **Phosphorus metabolism. A symposium on the role of phosphorus in the metabolism of plants and animals. Vol. II. Sponsored by the McCollum-Pratt Institute of the Johns Hopkins University.** pp. xv + 930. Baltimore: The Johns Hopkins Press; London: Geoffrey Cumberlege, Oxford University Press. 956

This volume consists of the papers and discussions presented at the second symposium on phosphorus metabolism, held at the Johns Hopkins University in June, 1952, the topics discussed being chosen to summarize those major aspects of phosphorus metabolism not covered during the first meeting.

The subject matter is divided into eight parts, each comprising several (3–9) papers, as follows:—I. Mechanisms of phosphate assimilation; II. The role of phosphate in amino acid and protein metabolism; III. The role of phosphorus in the metabolism of lipids; IV. The chemistry and metabolism of nucleic acids; V. The role of phosphate in the metabolism of photosynthetic and chemoautotrophic organisms; VI. Influence of hormones on phosphate metabolism; VII. Phosphate metabolism in specialized tissues; and VIII. Summary.

There are lists of participants and a subject index. Relevant literature is cited. The book is a useful addition to the library of workers in this field.—E. MARSH JONES.

ANON. (1953). **Antibiotics in pig food.** pp. 19. A.R.C. Rep. Ser. No. 13. London: H.M. Stat. Off. 1s. 6d. 957

A report on experiments, arranged at six centres by the Agricultural Reseach Council, on the addition of aureomycin or penicillin to pig food. A total of 512 fattening pigs and 208 litters of piglets were used in the various experiments. In general the improvement in growth rate averaged 10% more than controls in pigs on a diet which included some fish meal, and 14% in pigs on a diet of vegetable protein only. Aureomycin and penicillin did not differ significantly in their effect, and neither had any

effect on carcass quality. The weaning weights of piglets that had been fed with antibiotic supplements appeared to be higher than that of controls, but the difference was not statistically significant. Details of individual experiments are recorded in the text and in appendixes.

—R.M.

COFFIN, D. L. (1953). **Manual of veterinary clinical pathology.** pp. xiv+322. London: Baillière, Tindall & Cox. 3rd. Edit. 42s. **958**

Books dealing adequately with Veterinary clinical pathology do not exist, and it is a disappointment to find that the third edition of this book has only one small section which was not present in the second edition. The author stated in the preface to the second edition, that the material had been chosen to be of help to " the practising veterinarian, the veterinary student, laboratory diagnosticians, veterinary pathologists and research workers in animal problems ". To produce such a book satisfactorily would be difficult; to compress it into 302 pages is impossible.

The section on diagnosis of bacterial diseases is an example of the disastrous results which follow an attempt to write for too wide a public. Eighty-seven pages are devoted to this section, but the worker with little knowledge of bacteriology would be misled by its oversimplification, while the skilled bacteriologist finds the material so superficial as to be of little use.

While the book is too elementary to be of much use to a laboratory worker, the techniques described are too complicated to be suitable for the practising veterinarian. The author would be doing a great service to the profession if future editions were written for the laboratory man. The present edition could be simplified for the general practitioner.

The new section: " Diagnostic interpretation in clinical chemistry " is well written and could usefully be enlarged in future editions.

—G. B. S. HEATH.

KIRK, H. (1953). **Index of diagnosis (clinical and radiological) for the canine and feline surgeon.** pp. viii+667. London: Baillière, Tindall & Cox. 4th Edit. 45s. **959**

The second edition of this book was reviewed in this Bulletin [*V.B.* **15**, 1755]. That a fourth edition has been called for, shows that the book is being found useful. The author, a practising veterinary surgeon, is largely concerned with discussing, in the light of his experience and reading and from the viewpoint of clinical diagnosis, the causes and significance that may be attached to both obvious and obscure symptoms. These are listed alphabetically (along with such subjects as distemper, poisoning, tuberculosis, urinary abnormalities, and so on), and discussed at varying and sometimes considerable length. For example, the first 25 pages of the Index deal with " Abdomen, general enlargement; Abdomen, general decrease of; Abdomen, localised swellings upon; Abdominal pain ". Some eighty well-illustrated pages are devoted to X-ray diagnosis, and other X-ray pictures appear throughout the book. As compared with the third edition, the author has in revising this book paid particular attention to virus diseases, and a number of conditions are dealt with for the first time.

The book covers a good deal of ground. In the next edition, perhaps some of the illustrations which are below the general standard for the book could be replaced. Some conditions mentioned must occur very rarely if they occur at all in the dog or cat (*e.g.*, aortic aneurysm, pernicious anaemia, or gastric ulcer of the kind occurring in man), and a certain amount of pruning of the book with this in mind would tend to bring out even more clearly the commoner and more important conditions.

—E. COTCHIN.

DONATELLI, L. [Director, Institute of Pharmacology and Toxicology, University of Naples.] & SERAFINI, U. (1952). Gli antistaminici di sintesi; farmacologia e terapia. **[Pharmacology and therapeutic use of the synthetic antihistamines.]** pp. xi + 300. Naples: Edizioni Scientifiche Italiane. L. 1500. **960**

Recent progress in antihistaminic substances renders valuable a book such as this, which presents a well-balanced summary of these drugs.

An outline history is followed by a chemical survey, and interpretations of the mechanisms of their specific action, non-specific action, and secondary effects, relation to chemical constitution being stressed. Their toxicity is amply covered, and brief mention is made of metabolism.

The second part of the book deals with their effects upon man, and their clinical applications, both alone and in association with other drugs, in affections of the respiratory, nervous, uropoietic, cardiovascular, and gastro-intestinal systems, and the skin, and in miscellaneous allergic conditions. Sections on intolerance and on the evaluation of the drugs are valuable. There is an ample bibliography which could,

however, have been improved by enumeration of the references in the text and listing them at the end of chapters rather than in an author index. An alphabetical subject index would have been helpful.—F. R. HARRIS.

RALLI, E. P. [Edited by.] (1953). **Adrenal cortex. Transactions of the Fourth Conference, November 12, 13, and 14, 1952, sponsored by the Josiah Macy, Jr. Foundation, New York.** pp. 165. New York: Josiah Macy, Jr. Foundation. $3.50. **961**

The transactions of the fourth conference on the adrenal cortex are presented. They comprise an introduction by F. Fremont-Smith; an informal discussion on the permissive action of adrenal cortical hormones; mechanisms through which the adrenal cortex produces qualitatively different effects, H. Selye; existence, nature, and site of production of a salt hormone (mineralo-corticoid) secreted by the adrenal gland, M. Vogt; and adrenalectomy in man, F. D. W. Lukens.

Discussion on the subject matter presented by these three authors is reported *verbatim* and many references are given to each paper.

—E. MARSH JONES.

— (1953). **Advances in cancer research.** [Edited by: GREENSTEIN, J. P. & HADDOW, A.] pp. xi+590. New York & London: Academic Press, Inc. $12.00. 96s. **962**

In this and succeeding volumes, it is intended that " distinguished authorities in various branches of cancer research [will] review, synthesize and interpret the advances made in their individual areas of investigation ".

The articles in the first volume are: Electronic configuration and carcinogenesis (C. A. Coulson); Epidermal carcinogenesis (E. V. Cowdry); The milk agent in the origin of mammary tumors in mice (L. Dmochowski); Hormonal aspects of experimental tumorigenesis (W. U. Gardner); Properties of the agent of Rous No. 1 sarcoma (R. J. C. Harris); Applications of radio-isotopes to studies of carcinogenesis and tumor metabolism (C. Heidelberger); The carcinogenic aminoazo dyes (J. A. and E. C. Miller); The chemistry of cytotoxic alkylating agents (W. C. J. Ross); nutrition in relation to cancer (A. Tannenbaum and H. Silverstone); Plasma proteins in cancer (R. J. Winzler).

The book is obviously likely to be of most interest to cancer research workers, who will welcome a series of authoritative reviews of aspects of the subjects different from those in which they are particularly interested, but it will also be found to be of interest to veterinary pathologists who are aware of the great strides being made in various fields of the problem, but are unable to keep pace with the unceasing flow of research papers. The names of the editors and the authors are sufficient guarantee of the quality of the articles.—E. COTCHIN.

VANDEPLASSCHE, M. [Professor of Veterinary Obstetrics, State University, Ghent.] & PAREDIS, F. (1953). **Caesarian section in the bovine.** pp. 29 + xiv. Paris — Brussels: " Erasme "; Antwerp—Amsterdam: Standaard-Boekhandel. Fr. 75. [In English.] **963**

The authors describe, and illustrate by means of photographs, the technique of caesarian section in cattle which they used at the State University at Ghent, Belgium, and assess the result of 150 operations.

The anaesthetic of choice was β-naphthoxyethanol (" Anavenol-K ").

The site of the skin incision was 5–10 cm. lateral and parallel to the left subcutaneous abdominal vein (" milk " vein). An abnormally large calf was the commonest indication for operation (34% of all cases). Next came uterine torsion (24%) and incomplete dilatation or relaxation of the cervix due to other causes (20%). The total mortality rate of the cows was 10·9%, and that of the calves was 50%.

A comparison was made between the results of caesarian section and those of embryotomy. The authors found that, from the point of view of mortality, milk production, retention of the placenta, metritis, and subsequent fertility, the average results for embryotomy were better than those for the caesarian operation.—R.M.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

BENSLEY, E. H. & JORON, G. E. (1953). **Handbook of treatment of acute poisoning.** pp. 201. Montreal: Renouf Publishing Co., Ltd. $2.50.

COCHRAN, W. G. (1953). **Sampling techniques.** pp. xiv+330. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. $6.50. 52s.

HARVEY, W. C. & PERRY, H. A. (1953). **Food hygiene handbook.** pp. x+159. London: Heywood & Co. Ltd. 15s.

HUNGERFORD, T. G. (1953). **Diseases of livestock.** pp. 660. Sydney, N.S.W.: Grahame Book Co. 3rd Edit. 65s.

KÜST, D. & SCHAETZ, F. (1953). Fortpflanzungsstörungen der Haustiere. [**Reproductive disorders of domestic animals.**] pp. viii + 235. Stuttgart: Ferdinand Enke. 2nd revised edit. DM 19.

LAMANNA, C. & MALETTE, M. F. (1953). **Basic bacteriology. Its biological and chemical background.** pp. xiv + 677. London: Baillière, Tindall & Cox. 76s. 6d.

LAWRENCE, J. H. & TOBIAS, C. A. [Edited by.] (1953). **Advances in biological and medical physics. Vol. III.** pp. x + 368. New York: Academic Press Inc. $8.00.

PAPPENHEIMER, A. M., JR. [Edited by.] (1953). **The nature and significance of the antibody response. Symposium held at the New York Academy of Medicine, March 21 and 22, 1951. No. 5.** pp. x + 227. New York: Columbia University Press; London: Geoffrey Cumberlege, Oxford University Press. $5.00. 40s.

PIETTRE, M. (1952). Inspection des viandes et des aliments d'origine carnée. Tome I. Industrie de la viande. [**Inspection of meat and meat products. Vol. I.**] pp. 583. Paris: Librairie J.-B. Baillière et Fils. 2nd Edit. Fr. 2800.

PIETTRE, M. (1953). Inspection des viandes et des aliments d'origine carnée. Tome II. Techniques de l'inspection. [**Inspection of meat and meat products. Vol. II.**] pp. 838. Paris: Librairie Baillière et Fils. 2nd Edit. Fr. 4000.

REINHARDT, R. (1953). Die Geschichte der ehemaligen Tierärztlichen Hochschule zu Stuttgart. [**History of the former veterinary college at Stuttgart.**] pp. 34. Stuttgart: Ferdinand Enke. DM 4.

ROBINSON, F. A. (1953). **Antibiotics.** pp. viii + 132. London: Sir Isaac Pitman & Sons, Ltd. 15s.

ROUSSELOT, R. (1953). Notes de parasitologie tropicale. Tome I. Parasites du sang des animaux. (Système réticulo - endothélial). Tome II. Ixodes. [**Tropical parasitology. Vol. I. Parasites of the blood of animals. Vol. II. Ixodes.**] pp. 152 & pp. 134. Paris: Vigot Frères. Fr. 2050 inclusive.

SCHEER, B. T. (1953). **General physiology.** pp. x + 613. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 56s.

SCHWARZ, L. (1953). **Sanitary chemicals. A practical handbook dealing with disinfectants, household and industrial insecticides, floor waxes, soap and cleaning specialities, deodorants, and other sanitary chemical products—their manufacture, testing, packaging, labeling, and most effective use.** pp. 576. New York: Mac Nair-Dorland Co. $8.50.

SEN, K. C. (1953). **Animal nutrition research in India.** pp. xii + 370. Calcutta, Bombay, Madras & London: Macmillan & Co., Ltd. 25s.

SPEAR, F. G. (1953). **Radiations and living cells.** pp. xii + 222. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. $3.50. 18s.

WHITNEY, L. F. & WHITNEY, G. D. (1953). **The distemper complex.** pp. viii + 219. Orange, Conn.: Practical Science Publishing Co. $5.00.

ANON. (1953). **Mammalian germ cells. A Ciba Foundation Symposium.** [Edited by WOLSTENHOLME, G. E. W.] pp. xvi + 302. London: J. & A. Churchill, Ltd. 30s.

ANON. (1953). **Catalogue of the historical collection. Books published before 1850.** pp. 36. London: Royal College of Veterinary Surgeons. 2s. 6d.

ANON. (1953). **Annual review of physiology. Vol. XV.** pp. ix + 558. Stanford, Calif.: Annual Reviews, Inc. $6.

ANON. (1953). **World distribution of helminthiases.** pp. 21. New York, N.Y.: American Geographical Society. $1.25.

ANON. (1952). **The work of Sir Robert McCarrison.** [Edited by SINCLAIR, H. M.] pp. lviii + 327. London: Faber & Faber, Ltd. 30s.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey, Surrey.

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Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin*.

ERRATUM

V.B. **24**, abst. 400.

In the title of the original article the virus strain was given as A. It was erroneously assumed that this referred to the Waldmann type A and it was therefore translated as type O [German type A]. Actually the article deals with type A (Vallée) and should be read accordingly.

ABBREVIATIONS OF NAMES OF PUBLICATIONS

The abbreviations used in *Index Veterinarius* and *The Veterinary Bulletin* are those of the *World List of Scientific Periodicals published in the years* 1900-1950, 3rd Edit. (1952). London: Butterworths Scientific Publications.